GLEANINGS IN BEE CULTURE

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EDITORIAL

BY E. R. ROOT.

GETTING NEW HONEY ON THE MARKET EARLY.

EVERY year, for some reason, there seems to be an unusual delay in getting new comb honey, or extracted either, for that matter, on the market just when there is a clamoring demand for it. We have no doubt that there are many thousands of pounds of choice new comb honey ready to put in shipping-cases; but experience in the past shows that it will be a month, or perhaps two, before it is ready to be shipped. As it is, it all comes on the market with a rush—the inevitable tendency of which is to depress prices. If it could be shipped out, a little of it beginning the middle of August, continuing through September and along till October, *no faster than the market can take it*, prices will seek and hold a good level.

Those who know they have some choice honey should immediately seek out the buyers, state quantity and quality, and secure bids.

HONEY SODA-WATER.

OUR old friend Percy Orton suggests a new outlet for honey of a strong aromatic flavor. He writes:

> I think I have found an extra-good market for fine-flavored extracted honey of the light-colored varieties—namely: At soda-fountains where fruited cream is served, use in its place a large spoonful of extracted honey on the ice cream. I am selling raspberry, white-clover, locust, and basswood blend, at $1.25 per gallon can. Write this up for the benefit of others, and try the sale yourselves. PERCY ORTON.
> Northampton, N. Y., Aug. 18.

While raspberry and clover have mild flavors, basswood is strongly aromatic, and in our opinion it would show its individuality on cream more than some of the milder honeys. It occurs to us in this connection that some of these strong-flavored honeys that are a little too strong for table use would be just the thing for fruited cream. For example, honey from hoarhound is so bitter and strong that no one can eat it; but a little of it in candy is very delightful. In the same way it would seem to us that a hoarhound-honey soda would take well with the general public, especially in the winter time, for those who are inclined to coughs or colds. Perhaps buckwheat, so much prized in the eastern parts of the United States, would make quite a run at the fountain. We suggest that bee-keepers everywhere try using it. Get the proprietors of the soda-fountain to put up cards advertising honey cream sodas.

ELECTRICITY OR A LOW BAROMETER FAVORABLE TO THE SECRETION OF NECTAR.

ON page 441 of this issue reference is made to "electrical conditions" just preceding a rainstorm, that are thought to be favorable for the secretion of nectar. Like Mr. Holtermann we doubt whether electricity has any thing to do with the matter. Just preceding a heavy rainstorm in mid-summer the atmosphere is heavy and muggy, not to say uncomfortable to a human being. While it is undeniable that, just preceding a downpour, nectar seems to be secreted more freely at times, we would attribute that condition to the atmosphere—a condition that affects both thermometer and barometer. The electric display in the heavens that often follows or accompanies a storm is probably only an incident to a low barometer. There may be a low barometer, a spurt of nectar, but no lightning or thunder.

THE NATIONAL CONVENTION AT SIOUX CITY, IA.

ATTENTION is drawn to the fact that the next convention of the National Bee-keepers' Association will be held at Sioux City, Iowa, Sept. 22 and 23. The meeting at Detroit last year was one of the largest and most enthusiastic ever held in the history of the Association. While this is an off year for bee-keepers, yet we hope there will be a good attendance. It was never before held in Iowa, and the bee-keepers of that State and vicinity should make a special effort to go. Editor York, of the *American Bee Journal*, writes that he expects to be present, and, nothing preventing, GLEANINGS will be represented by one or more of its editorial force. This will mean, probably, E. R. and H. H. Root.

The railroad rates will be 1½ fare for the round trip for 200 miles each way. Board and lodging will be furnished by the Sioux City Y. M. C. A. lodging at not to exceed 50 cents, and meals at 10 cents up. The program will be given in our next issue. In the mean time, make your plans to go if possible.

HOT OR COLD UNCAPPING-KNIVES; STRAIGHT OR OFFSET BLADE.

CONSIDERABLE interest seems to be aroused over the question of honey-knives—the shape of the blade, whether hot or cold, or

whether they should be used with an up or down stroke.

Mr. J. L. Byer, on page 530 of this issue, writing on the question of hot or cold knives, sums up the matter pretty well when he says that no set rule can be laid down, as it is a matter that depends on the *honey*. He is quite right.

In all the discussion that has been going on, it begins to be apparent to us that possibly a knife with a straight handle, that has no offset, will, after all, be more convenient and easier on the wrist than one of the kind now generally sold. As there will be some uncapping this coming fall, we suggest that some of our honey-producers try a knife having a blade on the same plane as its handle. Get a blacksmith to straighten out the offset in one of your knives, and then try it alongside of one of the standard type.

SOILED, DIRTY, OR GREASY COMB HONEY AVOIDABLE AND HOW; COMMON CENTS AND COMMON SENSE.

MR. WESLEY FOSTER, on page 526 of this issue, draws attention to something that ought to receive more care and thought on the part of bee-keepers than has heretofore been given it. He asks the question why two bee-keepers in the same locality will have such different lots of honey—one white and the sections almost unspotted, while the other will have combs that are yellow, and varnished over with propolis. Then he goes on to suggest a remedy—keep propolis, as far as possible, out of the hive by frequent scraping, and the scrapings away from the reach of flying bees.

According to Mr. W. M. Whitney, in a recent article, watery or greasy sections are due to a lack of proper ventliation, at least in some cases.

This is a good subject for investigation and discussion, and we shall be pleased to hear from our readers who have any thing to offer on the problem, for it is one that involves the matter of *cents* and *sense*. A clean white comb honey will bring anywhere from two to four cents more per pound than another lot of comb honey of the same flavor and filling, with dirty, soiled, or greasy cappings. What we want to learn is the common sense that will get the other cents.

NOT GUILTY AS CHARGED.

OUR acknowledgments are due to the *American Bee Journal* for defending us against the implied charge in the *Canadian Bee Journal* that, because we are interested in the sale of supplies, we were therefore "glad" to condemn hives infected with foul brood, or burning them altogether. We have never advised the complete destruction of hives, bees, combs, and all, except when there was only one colony in the yard involved. If the disease reappeared we have always recommended treating it by what is called the McEvoy plan—shaking off on to foundation, with this difference—we advised applying momentarily a flame to the inside of the hive as an additional precaution. But this scorching-out should not in any way affect the utility of the hive, for the inside is merely browned slightly. Such procedure could not increase the sale of hives one iota. Bro. Hurley knows that.

For that reason we can scarcely believe that he meant to imply that we would be "glad" to have hives burned up or condemned in order that we might sell new hives to the poor fellows who have already suffered from the ravages of the disease.

We did not refer to the matter in our last issue, because we could not think that he meant what his words implied; nor would we have made any reference to it at this time except tha t the *American Bee Journal* seems to have gotten the same impression that the rest of us did.

Perhaps we ought to say that the editorial in the *American Bee Journal*, so stoutly defending us against the charge of selling our opinion, was unsolicited, and came as a complete surprise.

REVISED HONEY-CROP CONDITIONS FOR 1909.

THE situation since our last issue, pages 488 and 508, is practically the same as already reported. There is increasing evidence to show that, with some exceptions, there has been a fair crop in the alfalfa regions, taking in most of the irrigated districts where alfalfa is grown. In California the condition remains about the same. There has been from one-third to half a crop of sage and alfalfa.

There is additional evidence to show that in the region of Illinois, Indiana, Ohio, and Southern Michigan there has been a large amount of honey-dew gathered; but Illinois seems to have suffered the worst of any State in the Union from a failure of honey of all sorts. What little the bees did gather was honey-dew.

More reports continue to show from a third to half a crop of clear white honey in New York and Pennsylvania; a light crop in Maryland and New Jersey, with considerable honey-dew, and a light crop in Kentucky. There was a good yield in Maine and in several other of the New England States, although there are portions in the extreme Northeast where there is a failure.

All reports seem to show a pretty fair yield of honey of first quality and no honey-dew in Canada. In Minnesota and Wisconsin reports are very conflicting, varying from a total failure to a bumper crop.

Taking every thing into consideration, it would appear that the extreme northern part of the country, including Canada, suffered less by reason of honey-dew than that portion east of the Mississippi and immediately north of the Ohio River.

In the extreme Northwest, and eastern part of Oregon, the season, according to the Portland Seed Co., is above the average. In the State of Washington reports are somewhat conflicting.

There is evidence to show that some white-

clover honey, extracted, was held over from last year. There will also be quite a quantity of this year's white clover and basswood, but returns indicate that it will be slow in coming in. It is probable that prices on a strictly pure clover honey, both extracted and comb, will advance some over quotations for last year. While there has been a light crop of clover and basswood, there is no question but that there has been a pretty good yield of alfalfa in most of the Western States. This will have a tendency to level prices on clover. Mountain sage from California will also be somewhat in evidence in the Eastern markets.

The prospects for New York buckwheat from present reports are somewhat unfavorable. Good rains and hot weather which have come in since may change this.

The following report from a commission house came too late for insertion in our last issue, and we use it here. As this house has been gathering data from the West and Southwest, their summary will be read with interest.

Mr. Root.—Your favor of a recent date is received, asking for information as to the prospects, receipts, conditions, and range of prices this year as compared with an average year. As to prospects, we have reports from twelve States as follows: Utah, one reports good, one poor; Colorado, ten good, one poor; Idaho, one poor; Kansas, seven good, two poor; Nebraska, one good, one poor; Iowa, eight good, seven poor; Missouri, ten good, three poor; Nevada, one poor; California, two good; Mississippi, two good; Pennsylvania, one good; New Mexico, one good; also have quite a number reporting "too early to estimate," or "season backward on account of rain and cool weather."

Our receipts up to this time have been better than last year; have had no trouble in selling upon arrival; in fact, the demand far exceeds the supply, but we do not really look for as heavy receipts this year as last.

It is a little early as yet to predict prices. We are getting $3.25 for No. 1 white comb in 24-section cases; $3.00 for No. 2 white and light amber. There is no new extracted on the market as yet, but a fair supply of last year's crop is selling at 6½ for amber, and 7 for the white. We really look for prices to settle down to about $3.00 for No. 1 white comb and $2.75 for No. 2 and light amber. We hope and really believe that we will not have a repetition of last year's prices.

We should like to express our opinion right here in regard to grades, especially for our market. We do not believe it pays the producer to make two grades of his fancy and No. 1 comb, as it is very seldom that a retailer will pay any more for fancy than he will for No. 1, for the reason that he can get just as much for a section of No. 1 as he can for a section of fancy in retailing it. We advocate a No. 1 and a No. 2 grade for white honey and the same for amber.

As to conditions and quality, we will say that so far the quality has been good. We are not troubled here with black honey-dew, but are troubled considerably with poor grading. Some producers think it a good way to work off their off-colored and light-weight sections by putting them in cases faced up with No. 1, but they usually find out that this does not pay.

Kansas City, Mo. C. C. CLEMONS PRODUCE CO.

HIGH-WHEELED AUTOS FOR OUT-APIARY USE.

MR. BYRON WALKER, in his article, this issue, page 533, incidentally refers to the fact that he is using with some satisfaction a high-wheeled Holsman automobile for his outyard work. We wonder if there are not some others of our readers who have tested this or some other type of machine. If there are, we hope they will give us the benefit of their experience. While some of these reports may seem like free advertising for some of the machines, GLEANINGS will be glad to have the facts brought out for the benefit of its patrons who desire some cheap, quick, and reliable method to get to outyards.

We may say incidentally that high-wheeled automobiles, with solid rubber tires, are fast coming to be an assured success. They will go over muddy roads without skidding, in a way that some of the high-priced pneumatic-tired machines can not. In a limited way we have tested the two types of machines, and have become convinced that, for bee-yard work, the buggy type of automobiles with its solid rubber tires and high wheels has almost reached, if it has not already done so, a stage where the bee-keeper can adopt it to advantage.

Where there are several apiaries from 20 to 25 miles away, it is important to have some quick means for reaching these yards in any kind of weather and over any kind of roads. We are using the pneumatic-tired machine; but when the roads are bad and slippery we have to wait till they dry up. In the mean time work at the yards is neglected.

It is fair to state that the high-wheeled autos have not yet reached the state of perfection that has characterized the lower-wheeled machines with pneumatic tires. The engines of the buggy type are cheaper in construction, in most cases air-cooled, run at a comparatively high speed, and are more or less noisy. In country districts, where horses have not become accustomed to them, a high-wheeled, high-speed, air-cooled engine mounted in one of these horseless vehicles, is likely to put the horse-drawn affair out of business, from the fact that the horse itself may have a regular "conniption fit." The motors of the pneumatic-tired outfits, on the other hand, are of a higher grade, usually water-cooled, slower in speed, and, in some of the best makes of machines, comparatively noiseless. So far for our own use we have continued to use the pneumatics, principally because they are more reliable, better made, and are comparatively quiet while on the road. In our own locality, for example, we can pass almost any sort of horse-drawn vehicle with little or no danger of scaring horses.

We consider this question of the rapid means of reaching outyards a vital one. We believe the day is almost at hand when the horseless carriage will be the cheapest means of reaching these yards. The ordinary cost for gasoline and oil will not exceed a cent a mile as a rule. The ordinary horse, if he be maintained the year round, can not draw a vehicle to a yard short of five cents a mile, if we take into consideration the fact that he has to be fed oats and hay for over six months in the year when he is not in use. The gasoline horse, to carry out the figure, eats only when he is in use, and, moreover, does not require attention three times a day when he is idle in the barn or garage; and, what is more, when he is driven he can be steered among the hives without any danger of spilling the whole load because of a stray sting or two.

STRAY STRAWS

BY DR. C. C. MILLER

I'M HAPPY. Just been down to the apiary, middle of the day, Aug. 18, and bees seem working hard—first time since the long, long dearth. Oh, but it has a beautiful sound! I may yet have fall flow enough to save feeding for winter. Won't that be fine?

BEEN HAVING the fight of my life with black brood, and *I'm on top.* Whoop-de-dooden-doo! [The sympathies of all of our readers will go out to Dr. Miller in his fight against black brood. We also hope he will get a fall crop, because that will help him materially to stay the ravages of the disease. —ED.]

ALLEN LATHAM has sent me foundation-splints of common chair-seat cane, and a very slight trial makes me think it possible they may be an improvement. Their hardness is in their favor. He says, "They leave no ridges at all in the comb, and the queen lays in cells over them more readily than in cells over the wood splints." But in this locality the splints are no hindrance to laying.

I DON'T KNOW the answer to W. M. Whitney's question, p. 514, and can not verify his statement about greasy-looking brood-combs: first, because I haven't a brood-chamber that hasn't been disturbed; and, second, because I haven't had a honey-flow. He is quite right, that watery combs are different from travel-stain and glue, and has some ground for accusing Editor Root of unfairness in arraigning the Punics as gluers when watery sections were under discussion. But Editor Root's sin was one of omission rather than commission. That is, he failed to emphasize as much as he should the fact that Punics are the worst ever at making watery sections as well as being the worst gluers.

It does seem that bees that fill up close to the cappings ought to store more than those that fill their cells partly with wind; and yet the fact remains that my biggest yields have come from bees that capped white.

THE DRY WAVE may be somewhat fairly measured by the falling-off of Uncle Sam's revenue from the liquor business for the fiscal year ending July 30 last, as compared with the previous year. It was $7,641,978. Yet they say, "Prohibition doesn't prohibit." [Brewers and distillers generally are loud in their statement that "prohibition does not prohibit." They even go so far as to get statistics (or so-called statistics) that are either garbled from actual reports or manufactured to fit the statements they are trying to prove. But the significant fact is, if prohibition does *not* prohibit, *why* do they use their millions to fight it? Why do they try to get bankers and others who hold brewery stock to oppose local option and prohibition whenever such measures come up for consideration in our State legislatures? As sure as fate, if brewers sold *more* beer in dry territory, as they claim, you would find those fellows working every time on the side of the drys. Oh, no! they know their business too well. They work for open saloons and a wide-open town every time. O consistency! thou art a jewel.—ED.]

"THE GREATER ENERGY of a natural swarm has been admitted by practically all authorities and writers," p. 496. Guess that's true; but I'm looking for the fallacy to be exploded some day. R. C. Aikin has already expressed some doubts. Whatever spurt a natural swarm may make for a short time, in the long run it loses. With me swarming always means cutting down the yield, and my bumper crops come from colonies that have little or no thought of swarming. [Understand, we do not claim that bees can *not* be artificially put into the condition of a natural swarm after it has been hived. We do not know; but we do know that a natural swarm is much more active, both in the fields and in the hive than an *ordinary* colony left to itself. On this point we can not think that Langstroth or any other authority has made a mistake. But you have presented quite another angle to the proposition. We are inclined to agree with you, that a colony of bees that never thinks of swarming, and that has been bred up to a state of extra energy, will gather as much or more honey than a colony, and its swarm that loafs several days, swarms, and then gets down to business.—ED.]

CARELESS gossip does a lot of harm. There's Editor Root—looks like a right nice sort, and yet on page 488 he says what will be understood to mean that bees that have once engaged in robbing "are of no further use to their owner." A base libel on the bees. [Here is a question that admits of honest difference of opinion. While we admit that bees that have engaged in a case of wholesale robbing *can* gather honey afterward from the fields in an honest way, yet those same chaps are ever on the alert; and if any honey is scattered, or if any neighbors are canning fruit, they will do more than enough damage, twice over, to compensate for the little good they do after they went to the bad. In a queen-rearing yard especially, the sooner such bees are dead, the better.

We have proved it now to our own satisfaction that most of the robbing, if it has not continued too long, comes from one or two colonies or at most a very few. While it is true that a whole yard *might* be involved, yet as a rule robbers come from comparatively few hives in the whole apiary—usually not more than one or two in a hundred. If robbing were not contagious the case would not be so bad; but a colony in a bee-yard that is inclined to rob whenever it gets a chance should be put out of the way. We would not destroy the young bees that have not learned robbing of course, but put out robber-traps and catch and kill the old hardened sinners. No, sir, doctor; we will not retract the so-called libel.—ED.]

NOTES FROM CANADA

By R. F. HOLTERMANN.

QUALITY OF CANADIAN HONEY.

This season bee-keepers can rejoice in a very fine quality of honey which will increase very much the demand for the article. Butter is now worth an exceptionally high price, and the present outlook is very promising.

CAPPING HONEY.

Elmer Hutchinson in the *Bee-keepers' Review* for July, among other practical hints, mentions the honey lost in the cappings after draining them as much as possible. I, too, wrestled with that problem, and tried to melt these cappings, without the addition of water, by putting them in vessels and setting these in hot water, but the honey was practically unmarketable. For the last two years my solution has been to put the fairly well-drained cappings through a large solar wax-extractor. This, if proper attention is given, leaves a very marketable honey. The capping-melter, I hope, will be still better.

VENTILATORS IN SUPERS.

This season I have found quite a strong tendency to swarm; but having the old queen clipped, and with thorough care going through the brood-chambers, and destroying queen-cells every week, I have two chances at every embryo queen before a swarm can get away. I allowed two colonies to swarm, giving them a super each with a ventilator at the back. I have before stated that the bees do not use these ventilators as entrances unless young bees hatch in the supers. I now find that, if the ventilator is open when the swarm locates itself, bees may use the ventilator as a permanent entrance.

ELECTRICAL CONDITIONS.

W. Z. Hutchinson, in the July *Review*, writes, "The electrical condition of the atmosphere preceding a rainstorm is nearly always favorable to nectar secretion." No doubt many of us have noticed that, preceding a thunderstorm, the bees put in some of their best work. I have, however, often wondered whether it was not on account of the heat and moist condition of the atmosphere. With an almost saturated condition the plant throws but little moisture off, and the nectar rises in the nectar-glands of the blossoms. Such a condition may be obtained in a hot-house by means of heat and moisture, irrespective of any electrical condition; however, I may be wrong in my deductions. I can not say *conclusions*, for to my mind the matter is an open question.

HONEY-KNIVES.

Let me be bold enough to predict that the heated honey-knife will not supersede the cold. My son Ivar and a young man, Arthur F. Hodgson, who have been with me for years, and are now engaged in bee-keeping, recently helped me to extract honey; and while at work they stated that there is no need of a bevel on a honey-knife. It simply requires a blade strong enough not to spring. Since that, I see Louis H. Scholl, page 423, GLEANINGS, wants "just a plain butcher-knife." I have done very little uncapping, but I think likely the heavy knives we have been using are unnecessary. The two young men I refer to prefer to lean the top end of the comb toward the side that handles the knife. They cut with an upward stroke, when the strip of capping hangs perpendicularly, making a bevel unnecessary. We can agree on upward or downward stroke only when those who whittle are no longer divided into two classes, viz., those who draw the knife toward them and those who hold the wood nearest them and cut from them.

BEE-ESCAPES.

Elmer Hutchinson, in the July number of the *Bee-Keepers' Review*, gives his method of using bee-escapes. He writes: "We take the hive-cover off, give the bees a few hard puffs from the smoker, the combs of honey being all sealed over, and no open cells of honey for the bees to stick their bills in; half or more of the bees will at once rush down out of the super; when the one using the smoker pries the super loose, the other man lifts it up, and the one with the smoker slips an escape-board in place under the top super. We never put more than one super above an escape-board at a time."

So far as I know, the above method is about the best way of using the bee-escape; and there is no doubt that, to those who are in towns and cities, and to those who object to even an occasional sting, and to such as have limited experience in robbing time at least, the bee-escape is a boon. But it seems to me it is a great waste of time to such men as Hutchinson to put a bee-escape under a super such as he describes, and I could with the same help, almost, have the super of capped honey off the hive while he is getting the bee-escape board under. Then think of making another visit to the hive for every super on it, and think (or shall I say let us forget to think?) of warming the honey artificially and breathing the foul air from coal-oil stoves during extracting, tending to run a person down at a time when he is already under a good deal of physical strain! It just seems to me I should like to run a race with a man who uses bee-escapes. Mind, I am now discussing the advisibility or inadvisability of men using bee-escapes who are not surrounded by dwelling-houses, who know the kinks to prevent robbing, even in robbing time, and who will not make thoughtless slips which may demoralize the whole apiary. During the time that bees would rob we recently extracted, in a building no better than a barn, 5600 lbs. in one day of nine hours, and gave no trouble to the people with whom the apiary was located.

BEE-KEEPING AMONG THE ROCKIES.

BY WESLEY FOSTER, BOULDER, COL.

Cleome has been more plentiful this year than for several seasons, and the bees have secured quite a little honey from it.

THE HONEY CROP.

The second growth of alfalfa has not yielded nectar as was expected, and the crop in many districts will not be very satisfactory. Cool weather in July shut down work for a week or two, and the flow has not started to any great extent since. The grasshoppers have cut into the alfalfa-fields in many places; but the principal trouble is that there is nothing in the bloom. The weather has been favorable for several weeks, but with indifferent results. One super to the hive, I think, is a fair estimate for Northern Colorado. There are a few places that have done better than that, however.

Comb honey is in fair demand when it is remembered that this is a flush year for fruit. Comb honey brings $2.75 to $3.50 in a retail way.

PROPOLIS IN SUPERS.

I have often wondered why two bee-keepers in the same locality have such different-appearing lots of honey. One will be white, and sections almost unspotted, while the other will be yellow and all varnished over with propolis. Keeping the hives and frames well scraped of propolis, and keeping this propolis out of the reach of the bees is one essential. Leaving the scrapings beside or in front of the hive is almost as bad as leaving them in the hive, for the bees will be found working on those little bits, carrying them back into the hives. The use of burlap over the sections is another cause of yellow finish in the sections, and any propolis-clogged burlap left in the apiary is worked on by the bees, and the propolis carried back to discolor the comb.

BAITS—WHERE SHOULD THEY BE IN THE SUPER?

A bait is to coax the bees to store honey in the super before the lower hive is so crowded that they are *forced* to move upward. The thing desired is to get the bees at work carrying the honey in the brood-nest upstairs. The baits placed in the center of the super are more quickly occupied by a good force of bees than those placed in the corners. If the bees start with a rush, the speed with which they carry in the honey will fill the super clear to the edges and corners before they think of finding a place for the honey more nearly over the brood. If the flow is good, bees are not in a mood to leave the corners unfinished. But the flow in the best of seasons is not good all the time; and if one has enough baits it is well to put one in each corner with one or two in the center.

Baits—that is, empty sections of comb from the previous year—should be used only the first of the season; for if coaxing is needed later with some hives, unfinished sections can be taken from others. In taking off honey one always has some that are not finished; and it is folly to have a super on till every cell clear to the corners is capped if the flow is at all slow. In a fast flow the bees will finish it complete, any way.

I would say, put what few baits are to be used in the center, unless you are convinced that they will be occupied just as quickly if put in the corners.

CHEAP SHIPPING-CASES WITHOUT GLASS.

I agree with Mr. Crane, page 467, that a shipping-case is to carry honey safely to the retailer; and I also think it is asking too much to require the bee-keeper to furnish a show-case with every two or three dollars' worth of honey.

The original incentive to put up comb honey in glass cases came, I suppose, from the fact that dealers were slow in stocking their stores with honey, for they said, and still say, "Oh! I have no place to put it, and it leaks, sticking every thing up, and the ants can not be kept out of it."

For this reason the producer had to put his honey in a case where it would be protected from dust, ants, etc., and be tight, so no drip would leak out. By doing this the retailer was willing to carry honey in stock, so now it has become a habit with most of us. If Mr. Crane can sell more honey without glass in his cases, I say "Good!" If I could sell mine as well I would not use glass either.

I know that a pyramid of comb honey on the counter, with attractive pricemarks, will outsell any glass-front case, single or double tier, of wood or corrugated board. Comb honey put up in transparent paper wrappers would sell almost as fast, for the honey would be quite visible. Pasteboard cartons do not go in this market at all. They might if people were accustomed to them.

A rough board case could be made of cheap lumber for 8 or 10 cts. that would carry the honey just as well as the planed wood cases. Large display labels could be pasted on the outside to make for attractiveness and advertise the goods. These cases would have to be crated for express or local freight shipments, but I think they would cost about half what the corrugated-paper cases do, and would look better and make a safer pile in the warehouse.

Say, Mr. Crane, if we can get comb honey to the retailer in good shape, and then persuade him to display it in a prominent place, we can dispense with glass-front cases; but till we can interest the grocer in the goods he will expect us to do all the advertising and display, and he will take the profit. I believe a case costing not over ten cents can be made that will carry honey as safely as any now in use. When a market is developed that will pay as well for the unglassed honey as for that with glass we shall be effecting a big saving for the producer.

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

TAKING OFF COMB HONEY.

"Mr. Doolittle, I want to know if it is best to wait till the end of the season, and then take off all the comb honey at once, or take off all sections as soon as half a super of them, or such a matter, are sealed over."

"That depends very largely on the time you have at your disposal, Mr. Jones. If you have plenty of time, then it will undoubtedly pay you to take off the sections when fifteen or twenty in any super are finished, for by so doing such sections will not have their nice white cappings soiled in the least."

"But how shall I proceed?"

"You will want a lighted smoker and a wheelbarrow, and on the wheelbarrow a lot of sections which are filled with foundation ready to go in the place of those you will take off. Remove the cover over the sections and blow smoke down between the ranges of them till the bees have quite well gone below, when you can see about how many are finished. If from fifteen to twenty, unkey the super and take these out, putting those from your wheelbarrow in their places. If you do not see as many as ten or twelve which are finished, I should not bother to take any out. In this way you can go over all the hives. If the flow of nectar is good you can go over the yard again in a week, or at least that is about the way I did when I took off sections often so as to have all the combs nice and white."

"Is there no other way to do this?"

"Yes, you can use bee-escape boards, as at the end of the season, thus running all of the bees down below, off from all the sections whether finished or not."

"Then what will be done with the unfinished ones?"

"After you have the supers free from bees they are to be wheeled into the honey-room, where all are taken out, the finished and the unfinished, piling the finished ones away, while those not finished are put in the supers, filling each super full, so that they may be put on the hive again for finishing."

"But does this not cause a break of one or two days with the bees?"

"It is supposed that other supers will be on the hives, so that the bees can be at work in them while you are taking the others off and sorting them; but the bees seem to be broken up much more by this way of procedure than they do by the other way, so that when I take off any but full supers I generally adopt the plan first spoken of."

"Then you take off only full or nearly full supers, of late years?"

"That is what I have done mostly for the past twenty years; but during the twenty years before, I took off tons of honey the other way."

"With full supers how do you proceed?"

"There are various ways advocated by different apiarists, such as smoking the most of the bees below, then carrying the supers to the honey-room, and by bee-escapes at the windows allowing the bees still in the supers to come out to the window and then crawl out through the escape. Others pile up these partially beeless supers in a pile in the apiary, with an empty super on top, over which is spread a cloth, on which the bees collect, when the cloth is turned a few times, thus ridding the sections of bees. If at a time when so much nectar is being gathered that the bees are not disposed to rob, the supers can be set near the entrance of the hive, or on top, immediately over the entrance, when the bees will all run out into the hive below. But after having tried all of these I prefer to use the escape-board."

"Tell me how to put it on so the bees will promptly go out of the supers."

"If at the height of the season, when more supers are to be put on to take the place of the full ones taken off, there is no better way than to lift the full super from the hive, arrange the others as you wish them, when the board, with the escape in place, is put on top of them, the full super over this, and, lastly, the cover over the whole. At times when the bees are inclined to rob, great care must be taken to see that there is no place or crack big enough to admit a bee; for there will be no bees in this full super to defend it after they begin to run out. Several have reported all the nice sections in a full super spoiled by some little hole found by robber bees where they went in and carried off all of the honey, or enough from each section so as to spoil their sale. But with this caution you should have no trouble about this."

"How long does it take for the bees to get out?"

"With the Porter bee-escape, most of them will go out in from four to eight hours; but at the home apiary I generally put on the escapes during the forenoon, and take off the supers free from bees the next morning before the bees begin to fly much."

"But suppose it is at the end of the season, and you want to take all of the supers off at once. How do you proceed then?"

"Take your smoker, a good stout chisel, and a wooden wedge, together with the escape-board. Set the board down by the hive, and the smoker on it. Now insert the point of the chisel between the supers and top of the hive, and pry down on the handle till you can get the point of the wedge in the crack, which should not be large enough to allow a bee to come out. Now blow some smoke through the crack, which will drive the bees away; raise the supers with the chisel; push the wedge in half way, and blow in more smoke. Now grasp the escape-board with one hand and the handhole in the lower super with the other, and raise the supers as far as possible and not have them slide off the hive, when the escape-board may be pushed in as far as it will go, and the supers lowered on to it. Now by the help of the chisel bring the supers squarely over the board and the board squarely over the hive."

GENERAL CORRESPONDENCE

THE USE AND ABUSE OF COMB FOUNDATION.

A Plea for Comb Honey with only a Minimum of Foundation.

BY F. GREINER.

After many years of producing comb honey, of reading how others are doing it, and how the grading is being done, giving due consideration to all—producer, dealer, and consumer—and also studying the grading-rules, I have come to the conclusion that we have been catering altogether too much to the demands of the dealer or the man who has it to sell. I observe that, if comb honey is to pass as "fancy," the comb must be attached to all four sides of each section, and sealed to the wood. The better this is accomplished, the greater is the value of the product.

However, it is a fact that the *consumer* rarely demands such honey. I have placed gilt-edged comb honey in the hands of very exacting people at a fancy price—honey which was attached to the tops of the sections with only two little legs at the sides, none under the bottom, and yet the people who bought this honey were perfectly satisfied with it, although some of our producers of "fancy" comb honey would pronounce it only "very poor stuff." The producers of comb honey who are catering to the wishes and demands of the sellers only, are filling the sections full of comb foundation, running the sheets on with melted wax, sometimes on three sides of each section. Some are making use of split sections, which enable the user to get his foundation attached to three sides; but in order to prevent "buckling" they find it necessary to make use of brood foundation. When a consumer gets such honey he must dig it off from each side of the midrib; and how that can suit him, any producer can easily imagine. If these sections with the honey dug off and foundation still intact could be saved and gathered up for a repeated and perhaps indefinite use it would mean a great saving; but, of course, this is out of the question, and thus the only reasonable excuse for the method falls to the ground.

The consumer, for the purpose of eating, would call such a product "very poor stuff" indeed as compared with what our forefathers produced in soap-boxes and the like; and the wonder is that those who put this most inferior article on the market have the cheek to speak about their practice in public. It would seem to me that their love for money has befogged their brains, for they want to reap where others have sown. Comb honey has as yet a good reputation, and only on the strength of this these people are obtaining a good price for their poor output, although the seller may pat them on their backs and compliment them for their great (?) achievements, and buy their product before it is off the hive.

Comb honey, if it is expected to withstand shipping over our railroads, must of necessity be reasonably well-built out, and each comb must be attached to the sides of the section. This much I admit; but it is not necessary to meddle with the inside of the flakes to any extent. If we had a practicable method of obtaining naturally built new comb in sufficient quantities to start all our little boxes with we might get along without any section foundation.

Years ago our forefathers raised tons of comb honey without it, and we could do so again; but we of to-day find it handy now to use the artificial midrib. Indeed, we regard its use indispensable—at least when used as a small starter, and of the lightest-weight section foundation. All things considered, it is just as well to use the artificial starter, for even the natural new comb has its drawback. It has to be dipped into melted resin to fix it in place, and this leaves a hard substance at the place of detachment, which does not look nor is as well as a small foundation starter fastened in by the hot plate of a foundation-fastener.

MORE MONEY IN FULL SHEETS, BUT PRODUCT NOT AS GOOD.

I am sure I might have made a great deal more money had I used full sheets of comb foundation in my sections for the past 25 years or more. But as I did not wish to injure the reputation of comb honey I have refrained from doing so; for even the very lightest comb foundation leaves a hard distinguishable midrib. Many a purchaser may not even suspect that an artificial center is used in the section honey he has bought; but that does not alter the fact that the foundation does leave a hard tough substance, different from real virgin comb; and consumers who know about it can not possibly be satisfied with it. We are not, and a few others of whom I know.

A number of years ago I had been allured into using half-sheets in all my sections. That same year I happened to purchase 20 or 25 cases of comb honey of a neighboring bee-keeper who had used only very small starters. Mrs. G. quickly observed this, and she suggested that I had better reserve for our own use a few cases of this honey we bought, selling all of our own product, which I did to our satisfaction when it came to eating the honey.

Really good comb honey can not be produced with full sheets or half-sheets of comb foundation, no matter what the dealers may have to say. It is very true that, on an average, the combs are not attached quite as solidly, nor sealed clear to the wood as uniformly, with small starters as with full sheets, but particularly so when split sections are used; but from the commercial standpoint there is no need of sections being filled brimful. Section honey ships very well if the boxes are reasonably well filled; the sealing clear to the wood is not only not necessary,

but is undesirable. Better by far have the row of cells bordering the wood unsealed, and free from honey. That a merchantable article of comb honey may be produced without full sheets of comb foundation my 30 years in producing comb honey proves. I believe I have had as few smashups as any other producer.

The comb-honey producer who uses only small starters will occasionally have a few cases containing honey very poorly attached to the wood. This seems unavoidable. Sometimes we miscalculate the duration of our honey-flow, and give too much room. It happens even when we make no mistake. But what of that? Such honey always finds willing buyers from near by, providing we offer it for what it is worth, selling by weight. We have never enough to go around. During the honey season my sections are nearly always well filled, and attached on all four sides. Such as are not attached to the bottom, but have the other three sides securely fastened, are placed topside down in the shipping-crate. Thus they carry with safety. As long as our honey is bought by the pound there is no injustice to the purchaser if the sections are of light weight. He pays only for what he gets; and if the honey itself is good there is no reason for fault-finding. The only loss, in fact, hits the shipper, inasmuch as the cost of the shipping-case is the same whether the 24 sections contained therein weigh 18 or 25 lbs.

UNSEALED CELLS NEXT TO THE WOOD.

As to the number of unsealed cells admissible, a word might be said. Cells containing honey should be sealed. This is greatly to be preferred. However, if there are a few such cells unsealed, and the honey is thick enough not to run out when turned on its side, there will be no harm in crating it. Even should there be a dozen such cells on a face, few consumers will object. Here the man that does the crating must use good judgment, as iron-clad rules can not be laid down.

THE QUESTION OF GRADING HONEY FOR EXHIBITION PURPOSES.

Now we are coming to an interesting point, of the real merit of comb honey as exhibited at fairs. Comb honey for exhibition purposes must be perfectly clean, the comb as well as the wood. This is conceded by all. The boxes must be well filled, which is also conceded. Further, they must be *uniformly* filled and sealed all around with no popholes anywhere, not even at the corners. All worker comb looks better than drone comb or worker and drone comb mixed. To attain this greatest perfection is possible only with full sheets of foundation, and the split-section man has the better of every other competitor, although his honey is the poorest product which it is possible to produce.

If the exhibitor were obliged to show just how his sections were fitted when given to the bees, and this be made a prominent feature of his exhibit, the judge would be in better condition to judge who deserves the greatest credit. He ought to have the privilege of carving several sections of each exhibit to satisfy himself that no fraud is practiced. The man who produces a fine article of comb honey without comb foundation deserves greater credit than the one using full sheets, although in point of filling and in uniformity his exhibit may not be equal—in fact, can not be—to that of his competitor using full sheets. It is no great trick, and does not *per se* speak of mastery to produce perfect comb honey with full sheets of foundation. It is much more so to produce an article of which W. Z. Hutchinson says he would give five cents more a pound for it for his own use.

Naples, N. Y., Aug. 9.

ALSIKE POISONING.

Some New Appliances Tried in Extracted-Honey Production.

BY J. L. BYER.

After writing that note for GLEANINGS regarding the effect of alsike pasture on horses I thought that possibly it was unwise for me as a bee-keeper to have said any thing about the matter, as sometimes it does no good to ventilate even the truth too much. However, as a rule no harm can result from an honest discussion of any subject; and after reading what Mr. Case has to say on the matter I felt rather glad that I had brought up the subject for discussion, as what he says appeals to me very strongly as being the cause of the trouble. The only thing I can not understand is, why the trouble does not occur when the horses are pastured on red clover, as weeds would be just as apt to be there as in the alsike. As to the fact of the horses being poisoned while in the alsike pasture, there is not the slightest doubt, as the cases are comparatively common; but as to whether the trouble comes from the clover or the weeds, that is another question, and personally I shall be only too glad to find a scapegoat to carry the blame away from the alsike.

Only a few days after penning the note above referred to, I was called away on an inspection trip, and had to stay over night in Toronto; and while at breakfast in the hotel I happened to be seated near a farmer from Ontario County. In the course of conversation, the subject of bees and alsike clover came in for discussion, and my farmer friend casually remarked that he had left ten acres of alsike for seed, but that he had decided to pasture it off, as there was a lot of trefoil and other weeds among it.

"But," he said, "I had to take my horses off the alsike after they had been on only a week or so, as their noses, as well as their pasterns and fetlocks, all broke out in sores."

He further stated that he called the veterinary, and the trouble was pronounced "alsike poisoning." In fact, nearly all the veterinarians are calling the trouble by that name; i. e., where they are practicing in alsike sections. The trouble is little thought

of here any more as a very serious factor, for the simple reason that none of the farmers desire pasture of pure alsike. It is of little use as a second crop, as here it will not spring up after cutting as does its cousins red clover and alfalfa. The symptoms of the horses affected are just as described by Mr. McCormack on page 430—running sores, and swelling around the eyes; and, in the cases where the legs are affected, peeling off of skin with violent inflammation and other irritating symptoms. In conversation with the farmer mentioned I made it a point to ask as to the color of the horses, and I was surprised to hear him say that all the affected horses had white noses and white fetlocks. Sounds like a myth, but it is true just the same, and Mr. Case's diagnosis of the trouble seems like the most reasonable that I have yet heard. It is a good suggestion of his as well, as to the advisability of having an investigation made by competent authorities; but as the alsike is so well established here in Ontario it is doubtful if enough interest could be stirred up to get the project going.

A CAPPING-MELTER DARKENED THE HONEY SLIGHTLY.

We have had the capping-melter going, Mr. Editor—one made after the pattern you outlined. After the first day's using I was writing to the *Canadian Bee Journal* that evening, and I reported that the device was satisfactory in every way so far as we could see. However, after more trials we find that it does color the honey more or less, use it as carefully as we can. As you reported different results in using it at Mr. Fowls' last season, I can not see wherein lies our trouble. Any suggestions along the line that would enlighten us will be appreciated, for it certainly is a satisfaction to have the cappings all out of the road at the end of the day's work.

Possibly we did not give it a fair trial, though, as we did not use it as recommended, strictly speaking. Instead of having the cappings drop directly into the melter we preferred to use the uncapping-box, and then from time to time place the cappings in the melter, which was placed off to one side a bit. This was done because the heat from the gasoline-stove was noticeably felt when standing right over it. Of course the wax and honey did not have quite as good a chance to free themselves as quickly as would be the case if the cappings were dropped in more regularly. However, if we had to stand over the machine as pictured in GLEANINGS we would certainly not use it at all, as the heat is very much in evidence in our experience.

The coloring mentioned was not very pronounced; and, in fact, the first day we used the machine, continually drawing away the honey, we thought it was not discolored at all; but the next day after ceasing operations I left a bucket full of wax and honey till the following morning, and was then convinced otherwise. The honey was colored quite a lot; but the taste was not affected noticeably, so I suspect that, if the honey were distributed with the rest right along, very little if any harm would be done. I might add that, in placing the cappings in the matter, an equal distribution was made as far as possible, yet there is no question but that even then the machine did not have as good a chance as if the cappings dropped in directly from the knife.

PETTIT STRAINER HAS SMALL CAPACITY.

We also tried the Pettit honey-strainer; and, while it is handy, yet with this year's excessively thick honey we find the honey will not go through the cheese-cloth in the strainer as quickly as it will when the cheese-cloth is suspended over the tank and tied on in old-time style.

REMOVING HONEY FROM HIVES.

That article of Mr. Crowther's, page 426, is worthy of the commendation you give it, Mr. Editor; but I was wondering, when I read about the set of men operating at a hive, what short cuts are best for us medium producers with three or four apiaries. This year in running three apiaries, all the help we have hired has been a man to turn the extractor six days—three days will yet be necessary, making nine in all. The writer works alone in the yard, and also helps inside a little occasionally; and with a man to turn the extractor, and my good wife with the knife, we manage to run off from 1800 to 2500 lbs. per day. I admit that, after having handled all the combs, both in taking off the hives and in giving them back empty, we sometimes feel a bit tired; but then, the work lasts for only a few days, and after that we do not put in ten hours every day. After being used to working alone at the hives, I think it would take a lot of schooling to get me used to help, and possibly I may be in the rut so deep that I shall never be able to get out, and will continue to plod along at the old gait.

Just a word about knives, hot or cold. Two years ago I persuaded Mrs. Byer (who does all the uncapping, and insists on doing so because she likes the work) to use the knife cold, as our small coal-oil stoves had been stored away for the time being. This year is another story, and the stoves are going again; in fact, we can not uncap without the heat at all without bruising the cells all up, no matter how sharp the knife. In all our experience we have never had such gummy honey; and after this experience we feel like saying, regarding the controversy as to hot or cold knives, that there is no set rule that can be laid down, as it is a matter all depending on the *honey*.

Mt. Joy, Ontario, Can.

[We believe, as our correspondent says, that the melter would have had a better chance if used in the regular way—that is if the honey and cappings had dropped into the melter directly from the knife. The chances are that, since there was not a constant circulation, the part of the honey lodging next to the outside of the can became overheated before it could run out of

the gate. Moreover, with no cool honey dropping down into the melter it is probable that the contents reach a higher degree of temperature than the honey can stand.

If the heat from the melter is objectionable in the honey-house, it would be a good plan to wrap several layers of asbestos paper around the metal part so as to prevent radiation. In this way there would not be so much loss of heat into the room.

We should be glad to have reports from others who may have used strainers made like the one shown by Mr. Pettit, page 143, March 1. Perhaps a larger size would be necessary when the honey is very thick.—ED.]

ALSIKE NOT POISONOUS IN WISCONSIN.

Valuable Comments on Current Discussion.

BY ELIAS FOX.

Alsike clover has been raised here for the past 25 years, and each year it shows more acreage. It is generally fed to horses, cows, calves, sheep, and stall-fed steers, with the best of results. I have raised it on a small scale for 15 years, half timothy and half alsike; and though I feed no other hay no one has better-looking horses than I. It is viney, and has a slim stem, and needs the support of the timothy to hold it up. The stem is but little coarser than timothy, and for that reason there is never a straw left or wasted in feeding.

If alsike poisons white-nosed horses in Canada and kills stock, they certanly have a different variety from ours; but I am of the opinion that the difference is in the veterinarians. Everybody here pastures it with impunity with all kinds of stock. I think myself that white-nosed horses are more susceptible to poison than others, as I have seen them with sore noses caused by poison ivy or poison oak, and I have no doubt this was the cause of the sore noses in Canada, and possibly the eating of it or some other poisonous weed was responsible for the deaths diagnosed as alsike poisoning. Give us more farmers to grow more alsike clover.

18,000 LBS. EXTRACTED IN A SEASON WITH A TWO-FRAME NOVICE.

R. V. Cox, page 363, June 15, says the two-frame Novice is all right for the purpose for which it was built—namely, for extracting combs in a very small yard or partly filled sections. Now, when the two-frame Novice was invented it was considered a very good machine for both small and large yards; and I want to say I have one that has been in use for 27 years, and last year I extracted 18,000 lbs. with it, and it was capped honey too, and some of it was extracted in October. It pulled pretty hard, but the honey had to come. This work was done by my own hands, with my bees in four different yards. I have extracted as much as 1500 lbs. in a day with this machine, without assistance, and I should like to know how much better Mr. Cox has done with a four-frame reversible. This extractor with a new gear is now doing as good work as ever.

WHY BEES ARE CROSS JUST BEFORE A RAIN.

I don't think the editor quite hits the keynote relative to the enraged bees, page 420, July 15. It is generally known that bees with empty honey-sacs are more irritable and vicious, and this was just the condition in the case mentioned. Thousands and perhaps millions of bees were going to the fields with empty honey-sacks in anticipation of having them filled, and were driven back by the rain, with empty honey-sacs. They were disappointed, and this gave them just reason to be cross.

VIRGIN WAX WHITE.

Virgin wax, p. 422, July 15, in this locality is white. I know, as I had occasion one time to scoop up a double handful of the scales just as they were dropped from the bees, and melted them, making a cake of half a pound or more, and it was as white as any wax could be.

UNCAPPING HONEY DIFFERENT FROM CUTTING BEEFSTEAK.

Louis Scholl, p. 423, July 15, compares cutting beefsteak with uncapping honey. Now, I have run a butcher-shop, and I find the work entirely different.

Hillsboro, Wis., July 30.

[The little two-frame non-reversible extractor will do an immense amount of work; but it is our judgment, based on observation and from general reports, that where there is considerable extracting a large reversible machine will require considerably less labor and time on the part of the operator.

There is this fact to be considered, however, that a little light Novice takes up but very little room, can be set on to a wagon and carried to and from the out-apiaries, the extracting taking place at the yards themselves. Where a larger machine is used it is almost necessary to cart the combs home or to some central point, or have a machine at each yard.

We feel very sure that our correspondent is wrong in supposing that honey-dew from hickory, which has been gathered so largely in many sections of the country, is light-colored. Reports indicate that it is quite dark in color, with an ill flavor. In our own locality, especially in the vicinity of our south yard, we had a large number of hickories but no oaks. The only source of honey-dew (and large quantities of it were gathered at this yard) was from the gummy leaves of the hickory. The bees were fairly swarming on it; and everywhere the hives were filled with this black stuff.

While the color of honey-dew honey varies somewhat according to the locality, the gradation in our opinion is in proportion to the amount of real *white* honey that is mixed with it.

While there may be a certain exudation from hickory stumps, yet this substance is very different from that which we find on leaves of hickory here—an exudation from insects in the tops of the trees.—ED.]

THE RELATION OF ALSIKE TO SKIN SORES ON STOCK.

Alsike Not the Only Cause of Skin Disease, Hence should Not be Condemned.

BY GEO. A. SMITH.

Two years ago one of our horses was slightly affected with the so-called alsike poisoning. This one had a black nose, and showed only a slight roughening of the skin on the nose. Last year two colts with white noses pasturing on a newly seeded field of red clover were badly affected on the nose and face with the same trouble. This year the same two colts were pastured on a mixture of alsike and timothy, but have shown no signs of poisoning so far. At least 75 per cent of the growth on the ground is alsike, and this is its second year in the pasture.

My conclusion is that a rank growth of either alsike or red clover will, under certain conditions, produce a skin disease in horses, and that white skin is more apt to be affected than black.

The conditions necessary are, first, the presence of stiff stubble which will scratch the noses of stock; second, the clover must be wet, either from dew or rain; and, third, hot sunshine when the horses are feeding on the wet clover. I used common lubricating oil on the sores as a cure, with good results.

Prof. James Law, V. S., says, in the *Veterinary Advisor*, under the heading "Inflammation with Pustules," that horses suffer mainly at the root of the mane, on the neck, the rump, and on the lips and face, especially if white. He says:

> It is often chargeable on some disorder of digestion, as the result of unwholesome food, or a sudden change of food, as from dry to green, or from one kind of pasturage to another. Vetches affected with honey-dew have produced it in white horses, or in white spots of those of other colors; and buckwheat has affected white sheep, pigs, and goats, in the same way. It may, however, arise from habitual exposure to cold and wet, local irritation, as from rubbing, or from disorder of other internal organs. White pigs pastured on rape are often affected in the same way.

Again, under the heading "Congestion of the Skin," he says "this may coexist with all the different forms of inflammatory eruptions." It occurs . . . . from *the sun's rays* in white-faced or white-limbed animals." Further on he says:

> Cutaneous inflammation with nodular swellings, or urticaria, which are connected with sudden changes of food or weather. With some fever, there appear on different parts of the body swellings varying in size from a pea to a walnut, and often running together so as to form extensive patches which will close the nostrils, eyelids, or lips, and put a stop to feeding, and even threaten suffocation.

He advises the use of a purgative, followed by small doses of carbonate of soda internally, and the use of sugar-of-lead lotions to the affected parts as a cure.

You will see from the above extracts that, while alsike may be poisonous at times it is not the only cause of skin disease in horses, and so should not be condemned on that account. If you want to pasture clover, be sure to clip or roll the stubble so that it will not scratch the horses' noses, and then you can pasture it with little danger.

The only objection I have to alsike is that there is no aftermath, which is an objection of some force when a farmer has a lot of cattle to feed. I sow a mixture of three parts red to one of alsike, as a usual thing, and let it lie two years. We sow 6 lbs. of timothy and 8 of clover to the acre, and the alsike is quite thick the second year.

New Hamburg, Ont.

ALSIKE HERE TO STAY.

My experience with alsike, both for hay and pasture, has been very satisfactory. I have a field of four acres, seeded three years ago with red clover and alsike, half and half. I mowed it for hay the first year, but used it as pasture, mostly for sheep, last season and this. Red clover is not much in evidence after the first year. White clover came in unaided the second year, making a rich pasture for both bees and sheep. The sheep had access to a good pasture of blue grass in the field adjoining, but were always found in the alsike. I for one am an enthusiast on alsike, and most farmers in this section speak favorably of it as a hay-plant.

Many clover-fields were infested with dodder this year—a thing new in this section. Many farmers think this dodder came in the alsike seed, but this has not been proven, as dodder also has been found in red clover and alfalfa seed. Be that as it may, alsike, I believe, is here to stay, and is a boon to both bee-keeper and farmer. L. B. HUBER.

Lardis Valley, Pa.

SELLING HONEY TO EMPLOYEES OF FACTORIES; CANDIED HONEY ON BUTTER-TRAYS.

Last week I went to a factory where there were about forty men at work. I went first to the office and obtained permission to advertise honey among the hands at the close of the working hours. Before leaving the office I sold the proprietor one dollar's worth. When the engine stopped I was at the main entrance, handing out samples in waxed paper to each one as they passed out, and taking orders to be delivered the next day. Business was exceedingly lively for a few minutes. Orders came faster than I could write them down. Then on the day of delivery I took more orders, and told them to order by phone if I did not come around before they wanted more.

This plan of selling was quite satisfactory, the sales amounting to 180 lbs. for the week, mostly in 5-lb. lots on butter-trays. It was candied hard. The butter-tray is the most economical plan that I have ever tried, as the consumer does not have to pay the middleman's profits, nor for a costly container to be thrown away when empty. And, further, the producer does not have to liquefy the honey and put it in small containers.

There are several plans of selling honey, and the locality must decide as to which is the most feasible. I have been selling honey in Clarinda for 32 years, and have always advocated the cheaper plan and larger quantities. I have a trade that takes all I can produce, and I often have to buy to supply the demand. I do not sell in the stores, as it goes to slow to suit me.

Clarinda, Ia., March 3. J. L. STRONG.

UPPER ENTRANCES.

A Scheme for a Separate Alighting-board for the Supers; the Disinclination on the Part of Bees to Pass Through Excluders; an Easy Method of Superseding Queens.

BY B. WALKER.

I made a discovery last season, which, viewed in the light of past experience, will, in my estimation, prove of great importance to the producers of extracted honey. Possibly you will recall that I wrote you, several years ago, that I had been obliged to throw a late make of queen-excluding zinc on to the junk-heap, since it not only excluded the queen from the supers but the workers also, to a great extent.

Well, the discovery I refer to allows the use of the latest make of zinc without in the least hindering the work of the bees in the supers.

It is hardly necessary to explain the tendency that this plan has in the direction of swarm prevention, besides doing away entirely with the nuisance of drone brood, as well as worker brood in supers, and yet the scheme is so simple that it can be made use of by any one with very little expense.

It has been a source of satisfaction and profit this season. I know you will be glad to give this matter publicity.

The plan referred to is simply an alighting-board that obliges the mass of the working force to pass over the top excluder through an extra entrance provided above it to the supers by removing or leaving out the end to the rim of the excluder frame. My hives are commonly set up from the ground about five inches, and an alighting-board the width of the hive, and about 18 inches in length, placed at an angle of 45°, and of similar appearance, color, etc., to the one previously used with the hive is all that is required to accomplish the work.

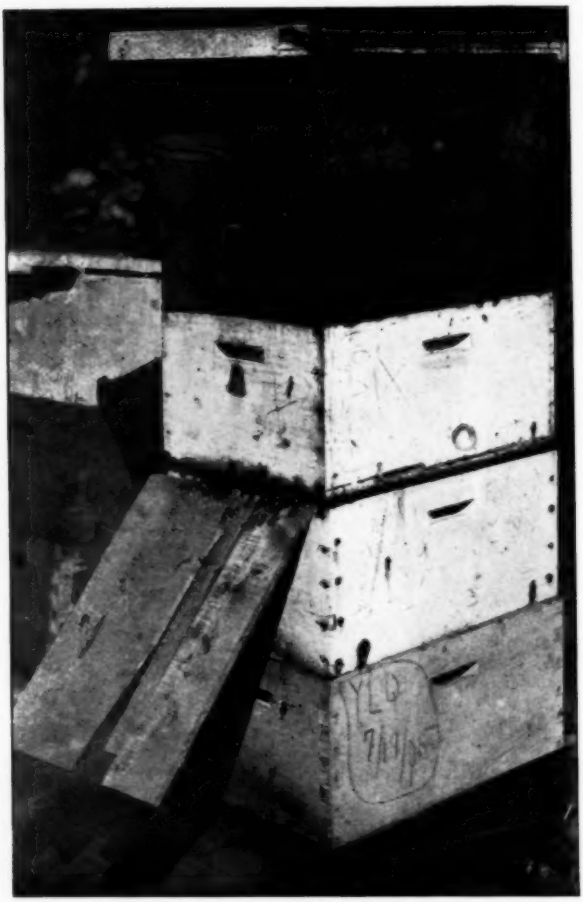
I use a double-depth brood-nest where the strength of the colony and prolificness of the queen require it; and by putting the combs of unsealed and newly sealed brood above the excluder, and those that are nearly empty, or contain brood in advanced stages, together with those heavy with bee-bread below the excluder, alternating the stories about every two weeks, the swarming problem is virtually eliminated.

The chief gain to be secured by the use of this plan is in localities where but comparatively little pollen is in evidence at the time the flow is on; for instance, where alfalfa is a chief source of surplus; otherwise it is necessary to put the excluder over the lower story of the brood-nest, which at this time should contain (for obvious reasons) the chief part of the young brood as well as hatching brood and queen, when it will be necessary to change places with the two stories about every ten days in order to avoid crowding with pollen above the excluder; and, of course, this takes valuable time when the flow is on.

WALKER'S PLAN OF USING AN UPPER ENTRANCE IN CONNECTION WITH AN ALIGHTTING-BOARD TO GET THE WORKING BEES DIRECTLY INTO THE SUPERS.

With two outyards (the one seven and the other three miles distant) with the honey-flow on, and work greatly behindhand, and only about a half supply of combs to meet such an emergency, I am having the time of my life. It keeps me busy till late each day seven days in the week. I am trying a high-wheeled auto, a Holsman, to save time in reaching outyards. This is my first experience in this direction, which promises some measure of relief.

My experience this season with the double-entrance plan has been comparatively slight, owing chiefly to the labor required to shift the two stories of the brood-nest at the proper time to prevent pollen clogging, without any help, and partly because I had faith that the new excluders would help in solving the problem with less labor. For this reason I am using but few of the old excluders in con-



WALKER'S PLAN OF USING AN UPPER ENTRANCE IN CONNECTION WITH AN ALIGHTING-BOARD TO GET THE WORKING-BEES DIRECTLY INTO THE SUPERS.

nection with the alighting-board scheme. I procured 200 of the new excluders, and have been using about 170 of them in the past two weeks, and I am glad to be able to report favorably. While, of course, the bees start quicker in the supers where no excluders are used, or where they are obliged to work largely over the old style, I find with good queens after a start is once made in the supers, with a good flow on, there is apparently no hindrance to rapid storing above the new excluders; and I will say if the outcome of the season bears out the opinion I have formed so far (many supers having been filled in the last few days), I shall have a lot of zinc excluders for sale very cheap.

There is one point that I think I forgot to emphasize as an advantage of no small importance in using my alighting-board scheme; and that is, the facility with which old queens can be superseded and a supply of young laying queens secured where a double brood-nest is used, and one of the alighting-boards arranged to carry the bees over the excluder top of the lower story.

It is also a comparatively easy matter to allow more or less of the working force if desired (on account of pollen being in evidence), to pass into the bottom section of the brood-nest by leaving off the *wings* at the sides of the alighting-board which will commonly be found necessary to carry the bees above at the outset, as they are inclined to pass either to one side or the other, otherwise, and sometimes (if the higher board is placed too high at the foot) to pass under the same.

Clyde, Ill., June 26.

[The scheme of plural entrances in connection with the use of perforated zinc, as here shown, was mentioned by Mr. E. F. Atwater on page 878 of our issue for July 15, last year. C. W. Dayton has been using the scheme, but how long we do not know. Others have referred to something similar.

Dayton's plan involved the use of only an auger-hole; but we should be inclined to think that the Walker idea of having full-width entrance to the super would be much better. His plan seems to be an improvement also, in that it provides a large alighting-board, obscuring to a great extent the old entrance, and at the proper angle for a bee in flight just as it alights. This we regard as quite an important factor in directing the flight of the incoming bees to the super direct instead of through the old entrance, the brood-nest, and the honey-board excluder.

We shall be pleased to have reports from others who may have tried the same thing or something similar.—ED.]

THE STOMACH OF THE HONEY-BEE.

How the Bees of a Swarm are Able to Subsist for a Week on Merely the Contents of their Honey-sacs.

BY DR. BRUENNICH.

In our former articles we have considered the tongue, tracheas, etc., of the honey-bee; but the organ which most concerns the bee-keeper is the stomach. The honey-sac, a part of the stomach, takes up every drop of the crop; and every drop not only once, but many times, has to pass this sac before it is completely ripe. I believe, therefore, that every bee-keeper who has a real interest in apiculture will be glad of an opportunity for the further study of the anatomy and physiology of the stomach.

If the head of a dead bee is fixed with a

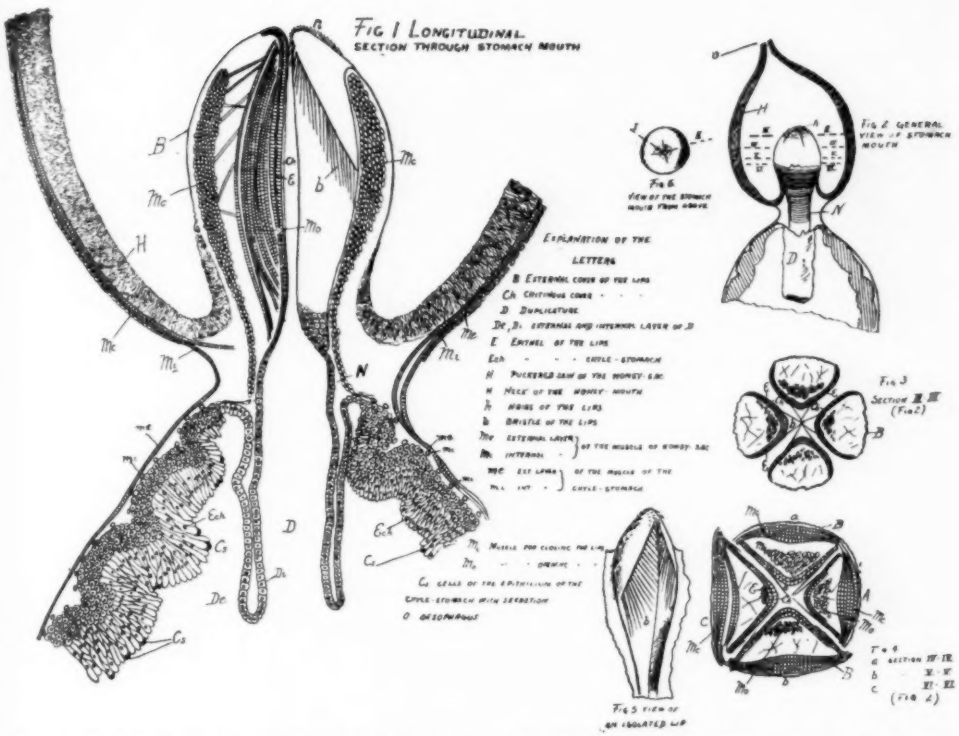


FIG 1 LONGITUDINAL SECTION THROUGH STOMACH MOUTH
EXPLANATION OF THE LETTERS
FIG 2 GENERAL VIEW OF STOMACH MOUTH
FIG 3 SECTION II III (FIG 2)
FIG 4 SECTION III IV V VI (FIG 2)
FIG 5 VIEW OF AN ISOLATED LIP
FIG 6 VIEW OF THE STOMACH MOUTH FROM ABOVE

pin so that it turns upward, and then the tongue drawn up with tweezers, an orifice called the gullet will be seen, which takes the honey into the esophagus. This tube extends through the breast or thorax, and, with the artery, spinal marrow, and tracheas, passes through the slender connection which unites the breast with the abdomen, where it is suddenly enlarged into the honey-sac. One can easily see the complete intestine by grasping the last segment of the abdomen with tweezers and drawing it out very carefully and slowly, together with the sting. If the work is nicely done, the whole intestinal tube may be exposed little by little. At first the rectum is seen, which is sometimes empty and sometimes so swollen by the mass of refuse matter which it contains that it is larger than the honey-sac. After this comes a very slender thread, the small intestine (*jejunum*). This is followed by the chyle-stomach, which is considerably thicker than the small intestine, and girded with a mass of tracheas, and supplied with circular incisions. After the chyle-stomach is an exceedingly thin thread, the stomach-mouth, connecting the chyle-stomach with the honey-sac. Like the rectum, the honey-sac differs considerably in size. When empty it is very small; but when full, as it is

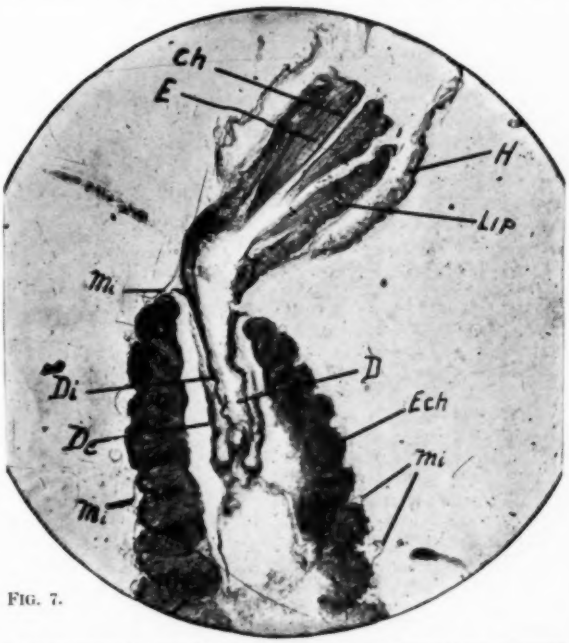


FIG. 7.

LONGITUDINAL SECTION THROUGH THE STOMACH-MOUTH.
This is further explained in Fig. 1—6.

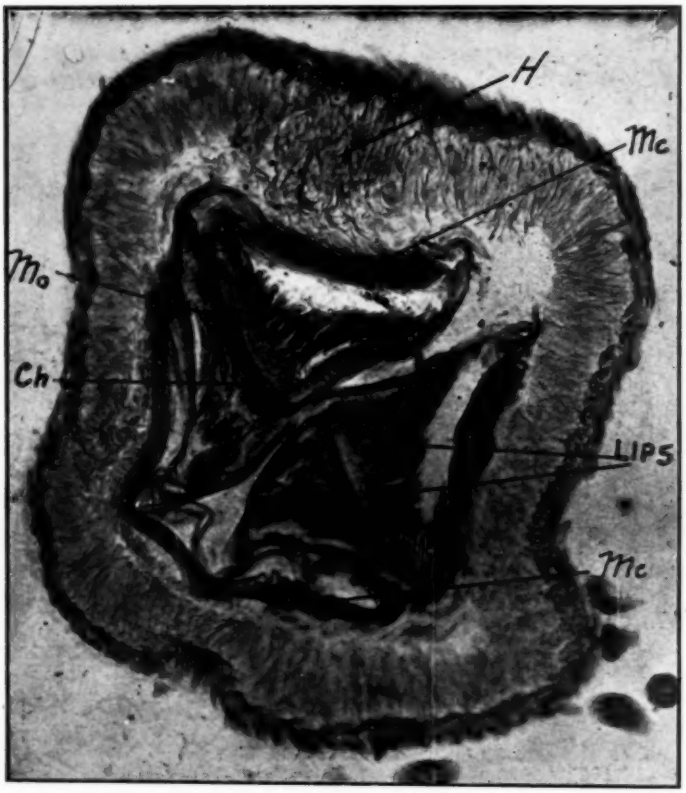


FIG. 8.—TRANSVERSE SECTION THROUGH THE STOMACH-MOUTH IN THE MIDST OF THE LIPS, THE HONEY-SAC BEING EMPTY.

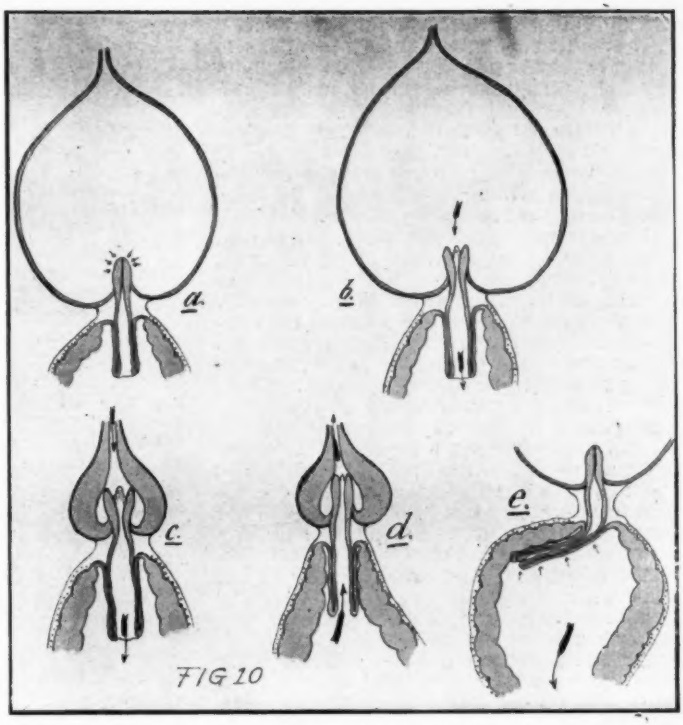
in a robber coming out of a robbed colony, it may be larger than a hemp grain. When I catch a robber for observation I remove the head with a pair of scissors and then draw out the esophagus, which is a fine thread, stronger than the small intestine. If the stomach-mouth is quickly examined with a magnifying-glass, one may be astonished to see, through the transparent honey-sac, a tiny knob with four lips which are constantly opening and shutting themselves, making an interesting spectacle. These are the four stomach-lips, which will be described later.

We will first consider the honey-sac, which is the receptacle for even the smallest drop of honey which the bee gathers. For the main part, this honey-sac has three layers. The inmost layer is a very thin skin, generally folded together, making innumerable plies. This is necessary so that it will stretch to accommodate the largest volume of honey. When the honey-sac is entirely full this inner skin is plain and extended; but the less the sac contains, the higher and more numerous these folds or plies become. This is exactly the case with the rectum, the size of which, as mentioned before, also differs very greatly. On the outer side of this skin we find minute longitudinal fibers coming from the chyle-stomach passing the surface of the honey-sac in slings. It is these minute fibers, or fibrils, which hold the honey-sac and chyle-stomach together. It is clear that a contraction of these fibrils squeezes the honey-sac, and also brings the end of it a little closer (together with the stomachal mouth), to the esophagus. Outside this layer of longitudinal fibrils are circular fibrils which extend around the honey-sac like the hoops of a barrel. The contraction of these

FIG. 9.—THE SAME AS FIG. 8, BUT THE HONEY-SAC NOT QUITE EMPTY.

latter fibrils, together with the longitudinal ones, serves to squeeze out the last drop of honey either into the gullet or chyle-stomach.

At the base of the honey-sac is a beautiful organ, the stomach-mouth, which is not easy to describe, but which I hope can be understood with the help of Figs. 1—5. The organ consists of four lips (Fig. 5), which form through the whole length a chasm in the shape of a cross (Fig. 4). The free part of these lips is closed with a chitinous skin, thickest in the middle, under which there are the cylindrical epithelial cells, the function of which is to renew successively the chitinous skin. At the base this skin is exceedingly subtile, passing over to the inner coverings of the duplicature. Besides this, we find on each lip, beginning at the top and extending down to the outside, a brush made up of a series of strong bristles extending down. These bristles form a filter, which easily allows the entering of pollen, but prohibits escape. In the space formed by the free sides of the lip there is the longitudinal muscle by whose contraction the lip is opened; and around the four lips there are the strong circular muscles, which easily close the entrance into this cruciform chasm. The outermost layer is a thin chitinous skin, closing the stomach-mouth, and continuing into the inner skin of the honey-sac. In the free sides of the interior of the lips there is a network of tracheas, and beyond them the blood-room, the function of which is to nourish the muscles and epithelial cells.



THE GENERAL SCHEME OF THE STOMACH-MOUTH OF THE HONEY-BEE IN DIFFERENT SITUATIONS.

a, a field or swarm bee fasting.
b, the same eating honey.
c, a brood-bee eating pollen.
d, a brood-bee feeding the brood.
e, Valvular close from the chyle stomach against the honey-sac, when the first is contracting itself for removing its contents into the small intestine.

Fig. 3 is a transverse section in the upper fifth of the lips where they are still free. Fig. 4 shows the sections at different heights. Following the inner skin of the esophagus we find that it goes into the folded skin of the honey-sac, then returns and forms the outer covering of the four lips, at the bottom of which it turns again and forms the cross-shaped chasm. At the base the skin becomes exceedingly thin, but is provided with cubical cells and goes into the duplicature (Fig. 1, D, also Fig. 7, D).

The cell-layer of the duplicature descends into the chyle-stomach about $\frac{1}{16}$ of an inch, then turns up and joins closely to the descending part (Fig. 1). At this point it ascends and bends around again, passing over rather abruptly into the glandular epithal (cell layer) of the chyle-stomach. The interior and exterior parts of the duplicature are joined together by fine threads. We will consider the function of these organs later on.

The most important organ of the whole intestine is the chyle-stomach. It is a cylindrical tube with walls that are considerably elastic. The inner covering consists of some layers of cells, the inmost ones being cylindrical, and the outmost ones cubical. A part of the cylindrical cells reach the glandular organ whose secretion serves for the digestion of the food. The ferments of the chyle-stomach, so far as we know, have not yet been examined for the purpose of determining their chemical and physical characteristics. A series of the epithelic cells absorb the assimilated food and remove it to the blood, which washes the chyle-stomach.

On the outside of the epithelic layer we find a great number of circular muscles, which, by their contraction, compress the contents and move them against the small intestine or else through the lips outward, as when the bee is feeding a larva. Outside of the circular muscles there are longitudinal

muscles which partly continue (Fig. 1) into the longitudinal muscles of the honey-sac.

The function of the stomach-mouth is to separate the filled honey-sac from the chyle-stomach, but still permit voluntarily a passageway between the two. The stomach-mouth also enables the chyle-stomach to express directly (through the filter made by the lip bristles) its contents into the esophagus, and from there into the gullet. (This point is not yet absolutely proven.)

A bee coming from the field, or a swarm bee, closes hermetically its honey-sac from the chyle-stomach. This action is quite automatic, and without effort of any muscle. The pressure in the inner room of the honey-filter forces the four lips together like the valves of a pump, the upper part of the lips being somewhat flexible (Fig. 10, *a*). Thus, without effort by the bee, no drop of honey can pass into the chyle-stomach. If the swarm bee is hungry, it contracts the longitudinal muscles of the lips, and thus opens the mouth, when a contraction of the muscles of the honey-sac forces a little drop of honey into the chyle-stomach, furnishing new fuel to the small engine (Fig. 10, *b*).

A young brood bee, which desires to eat some pollen for the larvæ, allows these lips to approach the end of the esophagus (the honey-sac being probably empty); opens them, and expels the chewed pollen directly into the chyle-stomach (Fig. 10, *c*). Then when this pollen is well digested into chyle the brood bee does the same as before, only (by the compression of the chyle-stomach) she squeezes the contents directly into the esophagus and gullet (Fig. 10, *d*). Here the bristles of the lips, forming a close net, keep back the undigested portions of pollen. When the bee is nourishing a larger drone larva, it probably opens the mouth wider, because it is known that, in the food for the drone larvæ, parts of undigested pollen are found, which is never the case in the food for young workers or queens.

According to Schiemenz, the duplicature plays the role of a valve. When a bee squeezes out the contents of the chyle-stomach into the small intestine, the mouth must be entirely shut. It would require a great effort of the shutting muscle, because it is easy to understand that the passage from below is more easily forced than the passage from above, on account of the conical form of the chasm; but if the duplicature lays itself slantwise on the orifice, the latter is shut automatically without great effort of the muscle, Fig. 10, *e*.

I must remark that Schiemenz admits that the glands of the head produce the jelly, and not the chyle-stomach—a theory which I do not approve. However, this question by experiment is very difficult to determine. For my part I think that these glands furnish the digested ferments to the food which is passing the gullet.

We see that the stomachal apparatus of the honey-bee is an intricate one, and we can not but marvel with reverent homage at the wonderful work of the Creator.

Ottenbach, Zurich, Switzerland.

THE HORNET.

BY WILL WEBB TUTTLE.

Mr. Beeman, with your quiet, easy-going, gentle ways,
Out among the mild Italians in the balmy summer days,
There's a nucleus of hornets by my garden, in a tree,
With more ginger to the square inch than your whole ap'ary.

You may smile when we affirm the black bee's business end is hot;
If you doubt it, wag your thumb and let that hornet have a shot;
For 'tis certain, when this warrior sees you warming up to him
He will send your astral body spinning round inside your skin.

For no bee-man's hide is proof against his mellifica dent,
Though it bear the apis odor, and emit the true hive scent;
And your "large, slow gestures," Mæterlinck, will fail you like the rest,
For there's no cell-grafting doing when one strikes a hornet's nest.

Muncie, Ind.

A HORNET'S NEST.
"For there's no cell-grafting doing
When one strikes a hornet's nest."

IS THE QUEEN RESPONSIBLE FOR GREASY CAPPINGS?

BY THE NEW MEXICO CHAP.

[On page 362 of issue for June 15, Mr. Wm. M. Whitney took the ground that we were wrongly blaming some of our very best queens because their bees happened to produce greasy sections; that the trouble was not due to the strain, but rather to the condition of "excessive heat and lack of ventilaiton." Since that time we have received several letters arguing the question pro and con.—ED.]

Mr. W. M. Whitney, page 362, June 15, says that the queen has nothing to do with the greasy capped honey we get from some colonies of bees. He asked why it was that he got fine white cappings, then greasy, and

then white cappings again from the same colony. Perhaps variation of honey-flow might have explained in his particular case; but from careful observation I conclude that the strain or breed of bees has almost all to do with it. In the spring and early summer of 1907 about 300 Holy Land queens were shipped into this valley, and introduced in five different yards. Since then we have come to own all these bees; and one of the most noticeable things about them is their greasy capped honey. So different was the honey they made and are still making that one can go into these yards where they were introduced here and there among the Italians, and by raising the covers and looking at the cappings of the honey tell which hives have the Holy Land queens. Now, considering that there were some 300 of these queens scattered through about 1500 colonies, and that most of the comb honey we took from them was so greasy in appearance that we had to crate it separately and sell it at a much reduced price, while the Italians at the same time and in the same yards made thousands of pounds of the finest white honey, we must conclude that the strain or breed of bees had something to do with the greasy cappings. I wish that Mr. Whitney would carry his experiment a little further by sending for a good Holy Land queen, and then, after giving her plenty of room and ventilation, report. I should be much interested, for I have condemned the Holy Land breed more on account of their greasy capped honey than for any thing else. I may have made a mistake, but I think not. I recall two or three hives which I have watched so closely on this point that I am sure that, in the last two seasons, they have not capped a single section or frame white, although I have sometimes had them working in as many as three full-depth extracting-supers at once. Some of these Holy Land bees are in the shade all day, and some in the sun. Some of them have good tight covers on the hives, and others an old shade-board thrown over them with cracks wide enough to admit one's finger, but I never noticed a case where the bees were evidently of the best Holy Land stock, and capped their honey white.

Mesilla Park, N. M.

WATER-SOAKED AS WELL AS WHITE CAPPINGS MADE BY BEES OF THE SAME COLONY.

Last season was very wet throughout the latter part of May and all of June, but I got a big crop of honey. The heavy flow of "white" and light-colored honey ceased suddenly the latter part of July, and there was nothing doing for a short time, about a week or ten days, when the bees commenced bringing in freely of a darkish honey, presumably from smartweed and heartsease. I had left all the supers on after removing the filled sections, as I then had no place to store them, and was hoping for a late flow of honey. It came, and the bees commenced just where they had left off; but what a change! The June and July honey was capped with coverings as white as snow, while the combs were plump; but the darker honey was as "watery" or "greasy" as any I ever saw, the capping being in direct contact with the honey at every point, while the combs were fully ¼ inch or more thinner than the white combs to which they were built.

There had been no time for a change of queens by supersedure or swarming, nor a new generation of bees—that is, entire; and I am convinced that this phenomenon of greasy or watery capping is due, not to a lazy or hustling queen (bees), but to some condition of supply, temperature, ventilation, or perhaps to the density or flavor of the honey itself.

Again, in a section-holder I have before me, taken off yesterday, are four sections. One is capped as white as a sheet of paper, while the one beside it shows "watery" cappings. Another of the four is capped largely white; but in the midst of the snow are cells with cappings as translucent as paraffine paper. In the same super were other sections showing the peculiarity in a very marked degree.

Lastly, the shallow "bait" frame is capped snow-white save for a row of holes next to the wood (lower bar) which are capped fairly transparent.

I have no doubt you have seen the same thing many times, and I wonder at the discussion now that I have looked into it.

DR. A. F. BONNEY.

Buck Grove, Iowa, June 22.

CAPPINGS "GREASY" BECAUSE BEES CLUSTER TOO CLOSELY ON THEM, PUSHING THEM DOWN TO THE HONEY.

I think Mr. Whitney is nearly correct in his conclusions, p. 362. Some twenty years ago, when producing honey in sections I saw many cases of it, and always in the strong colonies of *Italians*. The first proof I found bearing on the subject was when the combs in some hives melted down, the combs near the melted ones presented that same watery appearance. Second, I found that, by raising the front end of the hive half an inch off the bottom, and giving a little ventilation and shade at the top I seldom found any of it. The queen is somewhat indirectly responsible for it, in my opinion, because the bees of some colonies cluster closer on the combs than others. The black bees will usually run out of the hive and cluster on the outside before the capping is soft enough to be crushed down upon the honey by them.

Mauston, Wis., July 1. F. WILCOX.

[Apparently there are two sides to this question. It would seem that there are some conditions under which a strain of bees will produce greasy sections and other conditions when they will produce combs with snow-white cappings. It also seems to be equally true that there are some strains that are given to producing watery-looking honey. The testimony of the New Mexico Chap appears to support that position.—ED.]

SIX HUNDRED COLONIES SHIPPED BY RAIL IN HOT WEATHER.

Although Many of the Combs were New, Few were Broken; Queens Reared on the Journey.

BY WARREN C. DYER.

In an issue of the April number of GLEANINGS you asked for a communication from any one who had had experience in shipping bees by rail. As we have just returned from Arkansas with 600 colonies of bees, we will give you the benefit of our experience.

We made screens of $\frac{1}{8}\times1\frac{1}{2}$-inch lumber, the size of the hive. The wire was then placed on these frames, and half-inch strips nailed on each side, and quarter-inch strips at each end. We placed one on the top and bottom of each hive with four six-penny nails to each screen. We also bored a three-quarter-inch hole in the end of each hive. This work was finished June 4. That night we put corks in the holes bored in the ends of the hive, loaded them into lumber wagons (no springs), sent them to the station four miles from the yard, and loaded them in cattle-cars.

In the car we made three rows on each side with an aisle in the center, and another aisle across the car at the door.

We had no hand-hold cleats on the hives, and this fact allowed us to pack them so they could not move a particle with the bumping of the cars. We finished loading June 5 at 2 o'clock P. M., and pulled out of Boughton, Ark., at 6 that evening.

The weather on the 5th, 6th, and 7th was extremely warm, and there was no breeze except what the train made. We gave the bees water twice and sometimes three times a day. On the 6th we were laid out about five hours in the heat of the day at Ozark, Ark., on account of a wreck ahead of us; and as it was very hot and clear, with no air stirring, we were fearful that we might lose some of the colonies, and what little loss we did have occurred at that point.

We arrived at Wichita, Kansas, at about 8 P.M. on the 7th, and that night it stormed pretty hard. The next day was cloudy and cool, and not extremely warm the rest of the way. We arrived at Boulder, Col., at 2 P.M. on the 10th; unloaded that afternoon, hauling the hives in wagons with no springs about three-fourths of a mile; turned the bees loose that evening, having been closed up for exactly six days. Our total loss consisted of three colonies that smothered. We tried to divide up all large stocks into two boxes, but these three must have been missed, and I think they died at Ozark, as, the next day after we were laid out, there was a smell of dead bees inside the car.

I was surprised at one thing, and that is, I could not see that the brood was hurt a particle in the shipping, and the colonies that we had to divide up on account of being so heavy in brood raised queens and took care of these cells on the train. Five days after we arrived I saw twelve queens hatched from one colony in less than twenty minutes, and I could not see but they were perfect queens. Nearly every hive that had no queen raised queen-cells, and we saw none that were not hatched or had live queens in the cells. We did not leave over ten pounds of honey in any one hive. Half of the colonies were shipped on new combs or on full sheets of medium brood foundation in wired frames.

Our breakage in the 600 colonies did not amount to one dozen combs, and none of the foundation was hurt a particle. In my opinion, however, combs built in Arkansas are much heavier and tougher than those built in Colorado, and will stand much harder usage.

Boulder, Colorado, June 22.

HONEY-DEW HONEY.

The Requirements of the Pure-food Law in Regard to it.

BY W. A. SELSER.

[A subscriber recently asked us several questions in regard to the attitude of the law concerning the sale of honey-dew honey; and knowing Mr. Selser to be an authority on the subject we referred the letter to him. His reply will be of interest also to others who may have felt in doubt as to what they could do with the honey which their bees gathered.—ED.]

It would be ruinous for a bee-keeper to put up "honey-dew honey" and sell it for honey. You will, no doubt, understand the matter more clearly when I tell you that the pure-food law was drafted, not so much to stop adulteration as it was to state honest facts to the consumer. In other words, we could say that the pure-food law means simply honest sales. A bee-keeper has a perfect right to put all the glucose he wants to in his honey if he so desires; but when he puts it in any receptacle and offers it for sale, he must state on the package just what he has put in it. Now, that is fair, is it not? It is the most common-sense bill I have ever heard passed by Congress. Dr. Wiley had a personal talk with the writer shortly after this bill was passed, and on this very subject of honey-dew. Dr. Wiley stated that the law did not want the poor bee-keeper to stop selling all the honey-dew his bees gathered; but he positively must state on the article offered for sale, "Honey-dew Honey."

You also may know that this applies to any honey gathered from various sources; viz., if you put white-clover honey in a bottle, and so brand it, it must be strictly white-clover honey, and nothing else, etc. But in the case of honey-dew it is really not honey at all. It is simply "bug juice." As you may know, it is gathered from a secretion of the aphis, a little leaf-insect, and is largely dextrose, while honey is largely levulose. Nectar, as it is gathered by the bees as it comes in its original state from the plant, is largely levulose. So you can readily see that honey-dew is absolutely not honey at all. We have

found this year that quite a lot of honey-dew gathered has been almost pure honey-dew; but the question has been, where honey-dew is mixed in with other honey, how much, or what proportion, could be sold as honey without violating the pure-food law? By careful experimenting it has been found that any thing over twenty per cent crosses the danger-line. If you hold up your frames before putting them in the extractor, and find there is not more than one-fifth of it dark, I think it is safe, if you are a good judge, to sell this without branding it "honey-dew." But when bee-keepers are doubtful, as the consequences are so great, it would be advisable to send a sample to a chemist for his determination.

Philadelphia, Pa.

CARPENTRY FOR BEE-KEEPERS.

Hive-construction.

BY F. DUNDAS TODD.

Having decided to make some two dozen hives of the divisible type, my next step was to learn their dimensions. I had models in plenty in my collection—twelve bodies in all, ranging from Gallups of about one foot cube, inside measurements, to Jumbos, but so varied in size and style that it was practically impossible to combine any two of them. Some were butt-jointed, some checked, some mitered. To make the variety more complete, a few were flat-edged like all modern hives; some were rebated, while others had the beveled edge of the Simplicity hive. Careful examination indicated that not one was of Langstroth standard dimensions, but at the same time I did not know for a certainty what the standard dimensions were. For several days I searched my books from end to end; but it is simply amazing how indifferent the average writer is to such details, yet they are exceedingly essential. Here is where Dr. Miller shines like a brilliant sun among a host of twinkling stars, for he is exceedingly methodical in giving specifications of every bit of apparatus he describes. Deprived of his "Forty Years among the Bees" I feel I would at this stage have been helpless; for whether I was studying at my desk or working at the bench his volume was in constant use.

At the end of the notebook are two exceedingly valuable pages that I should hate to lose, for in them is a record of the dimensions and specifications of every thing that goes to the making of a hive such as I want. From these two pages I will draw liberally as these articles develop.

The most important measurements to know about a hive-body are the inside dimensions, for these are constant; the outside measurements will depend upon the thickness of the lumber available. Root's hives are made of ⅞-inch lumber; but in this part of the world ¾ is the standard thickness. So, inside measurements being known, one can easily make the necessary calculations for the lumber-bill.

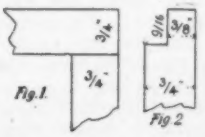
The standard Langstroth hive, eight-frame size, is 18¼ inches long inside, and 12⅛ inches wide; the ten-frame size has an inside width of 14¼ inches. When made of ⅞-inch lumber the outside dimensions are 13⅞ by 20 inches for the eight-frame size, and 16 by 20 for the ten-frame. In my case, using ¾-inch wood a hive will be 19¾ inches long, while the width will be 13⅝ inches for 8 frames, and 15¾ for 10 frames.

But before we order our bill of lumber it is necessary to learn the size of the rabbet we must have on the end pieces, for we are to use hanging frames. Now, the top-bar of a Root frame is 18¾ inches long; that is, they are half an inch longer than the inside length of the hive; and, besides, we must allow extra space for ease in manipulation—at least ¾ of an inch in all. If we divide this ¾ inch equally between both ends of the hive (and we must), then the rabbet on each piece will be ⅜ inch wide. This is what I use on ¾-in. wood; but Root uses $\frac{7}{16}$ on the ⅞-inch lumber, and I think it is better.

How many of my readers could, offhand, tell the exact location of the bee-space, whether at top or bottom, in a Root hive? I could not; but I simply had to know, for I intended to use Root's goods, and I was quite befogged until I remembered that, in my furniture pile in the barn, there lay a Danzenbaker hive. Examination showed the bee-space to be above the frames. But it is not always there, for in the hives in my collection it is sometimes at the bottom, and in bee literature I find diagrams showing both ways.

Now, the depth of the rabbet depends partly on the location of the space and partly on the thickness of the end of the top-bar. The Root shallow frame for the divisible hive has a top-bar ⅜ inch thick, but the lugs are thinned down to $\frac{5}{16}$. Allowing ¼ inch for a bee-space at the top, the total depth of the rabbet will be, therefore, $\frac{9}{16}$, which is that adopted in the Root hive. Now, as the depth of the divisible hive in Root's catalog is given as 5⅝ inches, and the frames are 5⅜ inches, we see that the bottom of the frames will be flush with the bottom of the hives. I made my first hives 5⅝ inches deep, and found them a perfect nuisance; so I increased to 5¾. Then came along a consignment from Root, and I found they also were 5⅞, so the catalog is at fault.

Since we are in possession of exact data of hive-construction, we are now in position to make out a bill of specifications for the lumber-mill. In my first effort I was content to use ordinary butt joints, thus, Fig. 1.



Here are the specifications for one eight-frame divisible body.

Two pieces ¾×5⅞×19¾;
" " ¾×5⅞×13⅛,

with rabbet on one long edge of end pieces, ⅜ wide and ⅞ deep, Fig. 2.

For ⅞-in. lumber the bill would read:

Two pieces ⅞×5⅞×20.
" " ⅞×5⅞×12⅛;

and in the drawing one must substitute ⅞ for ¾; and instead of ⅜ there would be written ⅞.

Then you will need two rabbet-tins ½ inch wide and 12 long.

It is very important that this box be exactly square at the corners, and to ensure this I nail the parts together while they are around a box whose outside measurements are the same as the inside dimensions of the hive, 12⅛×18¼. The one I use is made of ¾-inch lumber, and is a trifle less than four inches deep. The specifications are:

Two pieces ¾×4×18¼;
" " ¾×4×10⅝.

To keep the box in exact shape, and at the same time act as a guide while the hives are being nailed together, one of the open ends is closed with the same weight of lumber (bottomed, in fact), but with this difference—the bottom projects exactly ¾ inch all round, so that when the lumber of the hive is placed in position every thing is flush. These bottom pieces will necessarily be 19¾ inches long, and have a total width of 13⅝ inches.

Now, it is important that this jig-box be exactly square at the corners; and the easiest way to secure accuracy is by an arrangement of cleats on the bench. Begin by drawing pencil-lines on the bench, making an oblong 12⅛×18¼. Use an ordinary packing-box for drawing these lines, first having tested its squareness by measuring the distances from the diagonal corners. If both are the same length, the box is true. Your lines drawn, nail cleats on three sides, not necessarily the full length.

Now, exactly as you can, put the sides of the box together, using only two 1½-inch finishing nails at each corner. You are not trying to get rigidity yet; in fact, you want flexibility. This done, slip the box between the cleats on the bench and add the fourth, and your box will be exactly square at the corners.

One of the bottom-boards should have a pencil-line drawn on three sides, ¾ inch from the edge. Adjust these lines to the edges of the box, and nail with 2½-inch nails. Add the remainder of the bottom pieces, remove the box from the cleats and nail the corners, and you are ready to make a first-class job of your first hive. Here is how the jig-box will look—Fig. 3.

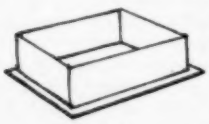


FIG. 3.

It is just fun to nail hives together around this box, provided it is of exact shape. Should you, however, in cutting out the pieces, get the end ones a trifle short or a trifle off square, do not worry, but pack them with strips of brown paper until you get the exact dimensions.

Ordinary nails, I find, even with fir, do not hold the hives true, and so I would advise that cement-coated nails at least 2⅜ inches long be used.

Add the rabbet tins to protect the edges of the rabbet, and your hive is ready for painting.

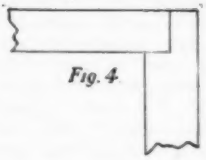


Fig. 4.

For a stronger construction I would recommend a check joint as shown in the drawing, Fig. 4.

Then our specifications will read:

Two pieces ¾×5⅞×19;
" " ¾×5⅞×13⅜,

the end pieces being rabbeted on one long side ⅜ inch wide and ⅞ deep, on both short sides ⅛ inch wide, and ¾ inch deep.

Victoria, B. C., Canada.

[We do not give dimensions of any of the standard hives in our text-books, for the simple reason that the great majority of people can not work by rule and figure. In our A B C and X Y Z of Bee Culture, under the head of "Hive-making," we advise every one who contemplates building his own hives to send to some factory and get a sample of such a hive as he proposes building. With the several parts of the hive before him he can scarcely go wrong, for all he has to do is to make duplicates of each part of the hive.

In the older editions of our work we gave dimensions; but we found that those who attempted to follow them would make mistakes. They would get the rabbets in the hive in the wrong place too deep or not deep enough; whereas if they had had exact patterns all this confusion would have been avoided. In our later editions we gave the dimensions of standard frames. When one takes into consideration the ¼-inch bee-space, and adds double this space to the length and depth of the frame he will get the corresponding inside measurements of the hive. The other dimensions will be determined by the number of frames used. Figuring that the frames should be spaced 1⅜ inches from center to center, with a bee-space of ¼ inch on each outside frame, we get the *inside* width of the hive. But we would not advise one to make hives on this way of figuring. He should, rather, work from a pattern.—ED.]

BEE-KEEPING IN CUBA.

Cattle-Raising is Responsible for the Poorer Bee Pasturage.

BY FRANK REIMAN.

I believe there is no other country in the world where the output of honey has decreased as it has in Cuba. When the Spaniards and Cubans alike were depredating Cuba and eating up the cattle. it was a glorious time for the bee-keeper; but now Cuba is being again well stocked with cattle, and the

best honey-plant, campanilla, or bellflower (resembling the white morning-glory of the United States), is being torn up by the cattle or cut down by the machete of the Cuban because the cattle do not eat it. In Manzanillo the exports have declined from 5000 barrels of 50 gallons each to 2000 barrels last year. This year, I am confident, the exports will not reach 1000 barrels.

The destruction of the timber has caused great drouth in the summer or wet season, and nearly all the streams go dry. Three-fourths of Cuba is now cleared, and the remainder is going very fast. Where there are no woods there is not enough honey to keep the bees living, and they will starve. All the large apiaries in Havana province are dead now, and Pinar del Rio is fast diminishing. This province, Oriente, has still plenty of timber, and by locating along a stream where the bees can always get water we can not help doing well.

I have three apiaries, and all are located on the Cauto River, where the tide rises and falls 2½ feet, so that it can never go dry. I move all the honey and supplies by river, as the roads are usually bad.

There are still plenty of good locations, but it is necessary to buy all the ground within reach of the bees, and so control the territory. I have over 950 hives at present in three apiaries, one of the two outyards being a mile west and the other a mile south. The home yard contains 350 hives; and 200 yards from it a neighbor has 200 hives more, so there are now over 1200 hives of bees inside of two miles. I find that the two outyards do better than the home yard—in fact, at the home yard I have to feed, while at the outyards, only a mile away, the bees are making surplus honey.

I have kept bees 27 years, and have never known them to work profitably when they had to fly over a mile for the honey. The largest crop of honey I ever raised was in Delaware, on a drained marsh that was all in heartsease and butterweed. My bees on the marsh, right among the flowers, made five times as much honey as other bees that were 1½ miles from the marsh, which made hardly any surplus.

I have extracted, from March 1 to June 1, 2500 gallons of honey and 1500 lbs. of yellow wax. The honey, until Oct. 15, is dark; after that it is white from the bellflower. When the white honey begins I expect to change from extracted to comb honey, as my frames are only six inches deep and twenty long. I will make wide frames that take 4×5 sections, and use them in the same super. I formerly used T tins, but have found that, to raise nice comb honey, the section must be closed entirely.

My crop of white comb will be about 25,000 lbs. We have good facilities for shipping at Manzanillo—steamers to all parts of the world, and weekly steamers to the United States.

As I am on tide water I can load the honey on lighters at the apiary, and load right on the vessel in the harbor of Manzanillo without rehandling. In another article I will explain my management of these large apiaries, the labor of which is done by the natives, who have very little intelligence—probably less than the American Indian.

Cauto, Cuba.

THE COLOR SENSE OF THE HONEY-BEE.

Some Original Work Showing how the Bees Seem to Favor Blue.

BY JOHN H. LOVELL.

It has been well established by experiment that the honey-bee can distinguish between colors. Instead of describing the experiment as performed by Lord Avebury (Lubbock), let me give some that I conducted along the same plan, and, I am glad to say, with even more conclusive results.

On a pleasant September morning I accustomed a yellow (Italian) bee to visit a strip of blue paper three inches long by one inch wide. To prevent the paper from blowing away or becoming soiled it was covered with a transparent glass slide of the same dimensions, upon the center of which a small quantity of honey was placed. These slides are used for mounting microscopic objects, and may be obtained of any dealer in optical instruments for a trifling sum.

After the bee had made a number of visits to the blue paper, a red slide of the same dimensions, and prepared as described above, was placed six inches to the right of it. An equal quantity of honey was also placed upon the center of this slide. When the bee returned from the hive it alighted on the blue slide, which still remained in its original position.

On the departure of the bee for the hive the slides were transposed, i. e., the red put in the place of the blue and the blue where the red had been. When the bee returned, and no longer found the blue paper in its usual position, it flew back and forth, examining both slides, paused for a second or two on the red, then resumed its flight, but finally settled on the blue. A little later it flew up into the air, but soon returned to the blue; then it flew across to the red, where it remained for the rest of its visit. The change in the position of the blue, and the discovery of a differently colored slide also bearing honey, evidently disturbed the bee; and its frequent flights showed that it was endeavoring to orient itself to these new conditions. As will now appear it did not find it necessary to repeat this course of reconnoitering.

While the bee was away I transposed the slides for a second time, the distance apart being as before—six inches. The bee returned directly to the blue. Twice it left the blue for a few moments, but each time returned to it.

When the bee left for the hive, I again transposed the slides; then the bee returned to the blue. The bee left for the hive, and I

transposed the slides. It returned to the blue.

While the bee was away I transposed the slides for the fifth time. The bee returned to the blue. Then it left the blue slide, flew across to the red, but at once returned to the blue.

The bee left for the hive and I transposed the slides. On its return it circled about as though in doubt and presently disappeared from view; but a little later it returned and settled on the blue. While taking up its load of honey it left the blue three times, but in each instance returned.

The bee left for the hive and I transposed the slides. It returned to the blue.

The bee left for the hive and I transposed the slides for the eighth time. On returning the bee hovered close to the red, and then went to the blue.

As soon as the bee returned to the hive, I transposed the slides for the ninth and last time. When the bee came back, it alighted after a little hesitation on the blue. It left once and flew across to the red, but soon returned to the blue. Left a second time but soon returned. Then it flew into the room, and on being released went back to the hive.

There can be no question that in this experiment the honey-bee was able to distinguish the blue color from the red. I repeated the experiment many times and varied it in many different ways, but the bee always showed its ability to distinguish between different colors. Only one bee should be employed, for if there are two or three they will conflict and to some extent produce confusion.

Lubbock also endeavored to show that blue is the favorite color of the honey-bee; but his results are unsatisfactory, and his method of exposition is obscure, and does not give sufficient details. Says Cowan in his book on the honey-bee, "The experiments of Sir John Lubbock are not at all conclusive that bees have a prefcrence for any particular color." On the other hand, Hermann Müller, who was the greatest authority the world has ever produced on the mutual relations of insects and flowers, declared, after innumerable observations, that blue is more agreeable to the honey-bee than any other color. In his experiments he used flower-petals of different colors placed under glass slides, and he arranged the different colors in the following series according to the preference of the honey-bee: violet, blue, red, white, pale yellow, pure green, glaring red, and glaring yellow. Within the past ten years, however, Prof. Felix Plateau, of the University of Ghent, Belgium, has published many papers, in which he asserts that Müller was misled by a too vivid imagination.

Now, does the honey-bee prefer blue to every other color or not? Is Müller or Plateau right? During the past summer, for the purpose of answering these questions I made many experiments with slips of colored paper and with floral leaves, but the results were inconclusive. Apparently there is no doubt that a person dressed in black will receive a greater number of stings than one wearing white clothing. Do the bees see the black more readily than the white? or does black excite them in the same way that red enrages the bull or the turkey-gobbler? Strictly speaking, of course neither black nor white is a color.

I am now devising some new experiments to be tried another season, in the hope of deciding the matter one way or the other. I should like to ask the many readers of GLEANINGS two questions. 1. Have you ever observed any evidence to prove that the honey-bee prefers one color (as blue) to another? 2. Can you suggest an experiment that will help in the solution of this problem? In either case will you kindly write and give me the benefit of your observations and suggestions? Let us remember that, in the multitude of counselors, there is wisdom.

Waldoboro, Maine.

HOW BULK COMB HONEY IS PACKED.

BY LOUIS SCHOLL.

In answer to an inquiry I will give our method of packing comb honey.

As it is impossible to produce an excellent article of comb honey in any of the deep frames so much in use, our supers are all of the shallow type with 5⅜-depth frames. With these it is possible to use full sheets of very light foundation. Room can be given only as needed, especially on weaker colonies; and the finished product can be removed sooner.

It is much easier to remove such shallow-frame supers, without handling and brushing a single comb, and in hauling the supers home, which we do with all our honey. The combs do not break down. In the honey-house they are stacked up, and the honey packed into different-sized cans, all in cases.

In most general use is the case holding two 60-lb. square cans, the same as for extracted honey, except that they have large openings with eight-inch screw-caps. Other regular and popular sizes of packages are 12, 6, and 3 pound friction-top round pails—the two sizes in cases of ten pails each, and the latter twenty to a case. All the above, with the regular 60-lb. square cans for extracted honey, were made the standard-size packages by the Texas Bee-keepers' Association many years ago.

In packing the honey, the frames with the combs are placed on a six-inch board laid across one of the tubs we use in our extracting-work. This catches all the drip and bits of comb and other wastes. The knife runs around the inside of the frame, which is then put back into an empty super, and later to be scraped clean with all the others, for future use again.

For the large square cans the combs are cut across the middle; and the two halves laid flat side by side make a layer in the can. The next layer is placed crosswise of the

first, and so on until the can is nearly full. One ten-frame super will fill a can. The combs are cut across into four pieces for the 12-lb. pails, and five pieces for the 6-lb. For the small 3-lb. cans the comb is first cut lengthwise from end to end, about one inch from the bottom; then crosswise into six pieces. This makes six small squares of comb, and the same number of half-squares of the one-inch strip first cut off. In packing these into cans we first place two of the smaller (or half) squares side by side in the bottom of the can, then lay two of the squares on top of these. In this way three cans can be filled with each comb.

Extracted honey is then poured in over the comb honey to fill up the crevices and empty space, and make up the weight. It also keeps the comb honey in a buoyant state, so that it does not mash up in shipping.

We always make it a practice to heat all our extracted honey before putting it on the market, as it will prevent granulation much longer. The liquid honey is filled in quite warm, and the cans closed. Nothing but first-class honey should be put up under any circumstances, and then a profitable trade can soon be secured.

New Braunfels, Texas.

CELL-BUILDING IN COLONIES WITH CAGED QUEENS.

BY J. A. CRANE.

[The Crane method of forming nuclei, as stated in our June 1st issue of last year, in brief, is this: The queen of a colony is caged three days, during which time cells will be started. The hive is then lifted off its bottom and a body of combs and a frame of brood with the queen is put in its place. A honey-board is put on, after which the removed brood-nest with its cells just started is set on top. The bees, according to Mr. Crane, will continue building the cells. On this point Mr. Buchanan, in our May 1st issue of this year, took issue.—ED.]

On page 284, May 1, Mr. J. F. Buchanan evidently refers to my article on increase, p. 757, June 1, 1908. I intended to indicate that the plan was a sort of combination of the Somerford and Alexander methods — the Somerford so far as getting cells started, the Alexander in getting all brood hatched and sealed, so as to lose none from starvation or neglect. I have used the plan for two seasons with the greatest success, having had only one failure out of fifty last season. In one case I caged the queen in the forenoon, and found the bees had started cells before night the same day. I raised the brood to the upper story, and released the queen below an excluder, and the bees finished the cells in fine shape. I also get the best of queens in this way, as I never let the bees raise more than ten at one time. I did not say that it was necessary to have honey coming in to make the plan a success, because I never imagined any one would want to make increase or raise queens except during a honey-flow, unless it was a regular queen-breeder, and they understand the necessity of feeding, and practice it when necessary. I want no queens which are reared by artificial feeding myself. While they may sometimes be good, the chances are certainly in favor of those reared during a good honey-flow.

IS DOOLITTLE WRONG IN HIS ESTIMATE OF HOW FAR BEES MAY FLY?

I have also several times noted Doolittle's statement in regard to bees' flight; and while I have never doubted one statement that came from his pen, and have probably learned as many profitable kinks from his writings as from any other one source, I still doubt whether my bees ever get much more than two miles from home. To-day, May 16, there are many patches of dandelions, and a few apricot and Japanese plums, and many hard maples, in blossom. On my way to church, and also on the return trip, I watched closely all the way; and as the nearest bees in that direction are a good four miles, and all blacks, while mine are all yellow, the last yellow bees I could find were a little more than a mile and a half from home, and then for nearly a mile I did not see a bee of any kind. Of course there were not many fruit-trees in bloom; but every one that was, was literally alive with bees; also every patch of dandelions. The hard maples were most plentiful, and the bees were working on them in my yard, and for a quarter of a mile along the road much more than further away. I think the fruit-bloom yielded a little honey, as I could detect the odor of new honey in the yard. If the maple affords pollen only, as I believe, it seems that my bees were satisfied to get it at the nearest available spot, but would fly the limit to get a little nectar.

Marion, N. Y.

A NEW EDITION OF THE A B C AND X Y Z OF BEE CULTURE UNDER WAY AGAIN.

WE are now busy at work on a new edition of the A B C and X Y Z of Bee Culture. It is astonishing, the number of changes we have to make from year to year—not because we have to throw out matter that is false or misleading, but because there are better methods or shorter cuts for accomplishing the same end.

We get out, on an average, a new edition of 15,000 every year and a half, or 10,000 every year. During this interval, new ideas or better practices are brought out. For example, during 1908 and '9 there seemed to be a large amount of testimony to show that feeding copiously in the fall was far better than feeding in the fall to a moderate extent and then again in the spring to stimulate.

In the multitude of counselors there is wisdom, and so in the new edition of our work we are putting more emphasis on fall feeding and less on feeding in the spring, although there come times, of course, when the latter is absolutely necessary.

HEADS OF GRAIN

FROM DIFFERENT FIELDS

FOUL-BROOD LEGISLATION IN CONNECTICUT.

Mr. E. R. Root:—A bill presented by the bee-keepers (which was, I understand, commended by Dr. Phillips and yourself, and which called for an appropriation of $1000) was rejected; but certain members of the legislature realized that something ought to be done, and one interested member drew up a substitute bill which was passed. This was the third attempt to secure foul-brood legislation, and came near being a failure. Credit is due Mr. Stephen J. Griffen, of Bridgeport, who has persistently kept the matter before the bee-keepers and legislators, and who succeeded in obtaining valuable information as to the extent of foul brood in the State, which influenced the General Assembly.

Your editorial opinion of the bill will be appreciated.

JAMES A. SMITH,
Secretary Connecticut Bee-keepers' Ass'n.
Hartford, Ct., July 31.

FOUL-BROOD BILL

PASSED BY THE CONNECTICUT LEGISLATURE, JANUARY, 1909.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SEC. 1.—For the purpose of suppressing contagious or infectious diseases of the honey-bee, it shall be the duty of the State Entomologist, when complaint is duly made, to examine and verify, and treat or destroy cases of foul brood among honey-bees.

SEC. 2.—In pursuance of the provisions of this act, the State Entomologist, or any person whom he may appoint for that purpose, shall have access at reasonable times to such apiaries or places where bees are kept, and where honey-comb and appliances are stored, as may be designated in any such complaint.

SEC. 3.—The State Entomologist is authorized and empowered to prescribe suitable forms for and to make regulations regarding such complaints, and shall keep the same on file, and open to public inspection; and he is further authorized and empowered to make, in his discretion, reasonable rules to govern, and reasonable payments for the services of agents whom he may appoint to carry out the provisions of this act.

SEC. 4.—Any person who impedes, resists, or hinders the State Entomologist or any agent whom he may appoint in the performance of the duties imposed by this act, shall be fined not more than twenty-five dollars.

SEC. 5.—To carry out the provisions of this act, the necessary expenses, to an amount not exceeding five hundred dollars, shall be paid by the comptroller on duly credited vouchers.

[This law seems to be not quite clear on some points and silent on some others. In section 3 the State Entomologist or his authorized agent is "empowered to prescribe suitable forms and to make regulations regarding such complaints." While the agents can be paid out of the fund of $500 appropriated, as provided in Section 5, it is not made clear whether such agent has authority to apply a penalty if the "regulations" and "suitable forms" are not complied with.

In section 4, any person who impedes, resists, or hinders the State Entomologist or his agent may be fined $25.00. If this section can be construed to mean that such person can be fined if he refuses to comply with the instructions or orders for treatment of any disease given by the entomologist or his agent, well and good; but even then the fine is rather low. In most of the laws imprisonment is made a part of the penalty at the option of the court.

In a general way, we would say that this law is far better than nothing; and if the Attorney General of your State should construe section 4 to mean that a foul-brood inspector has full authority to apply the penalty of $25.00 in case of non-compliance with his orders, then the law will do very well; but we should say that, at the next session of your General Assembly, this provision ought to be made a little clearer and the penalties heavier.—ED.]

INTRODUCING QUEENS BY SPRAYING THE BEES WITH WATER.

Get some water and a bulb-plant sprayer and turn the cloth back over the top of the frames. Shower the bees as long as they come up, until they are quiet and hugging the combs. In this condition they can not sound a note; in fact, they are completely knocked out. Now turn the queen in, giving her a dampening also. We raise a comb if we like, and turn her right on to the comb, when she will be received. If turned among the bees on the comb the queen will be hungry, and so need not be wet.

We have introduced many queens in this way and had no failures. It is not necessary to drown them. If there is no sprayer handy they can be simply sprinkled with the hand. At a time when there is brood in the hive, use warm water, otherwise the cold is just as good.

We took one of our most vicious hybrids and gave a live-bee demonstration at the fair to a large crowd, with no cage or protection of any kind, handing a comb around to show the queen, and no one was stung, the bees being treated to a light showering a little before opening. The sprinkling was done through a wire-cloth covered super placed on the hive as used for ventilation.

Queens can be changed by this plan without having a colony queenless, and work goes on as usual as soon as the bees are dried off.

J. W. WARE.
Puyallup, Washington.

[The scheme of spraying bees with water, or with water sweetened with a little sugar, for the purpose of facilitating the process of introducing, has been mentioned at various times in these columns; but we do not advise either, for the reason that the regular method of introducing we consider much more reliable.

The application of water in a fine spray has the effect of disconcerting or putting out of normal a colony of bees for the time being; and while in that condition it will be a little more inclined to accept a queen than otherwise. If any others have had any experience in this plan we shall be glad to hear from them.—ED.]

QUEENS FLYING AWAY WHEN HIVES ARE OPENED, AND NOT RETURNING.

I received a queen by mail and introduced her all right, but I don't know where she went to. About four days after I put the cage in the hive I opened it to see how the queen was. Suddenly she flew, and, of course, I thought she would come back; but in twenty minutes I could not find her in the hive. So I looked in my six other hives (I have only seven), but she was not in any of them.

Strangest of all, the last hive I opened, the queen flew from that hive too, and did not come back. I can not account for their not coming back except that there was a swarm hanging near, and the queens entered that. The latter queen knew her hive, because she was mated there about a week before.

Oakland, Cal., July 22. L. MCCARGAR.

[It is very rare that a queen will deliberately fly off the comb when the hive is open. When she does this the only thing to do is to leave the hive just as it is, with the cover off, and step back. The queen will circle about in the air to mark her location. If the hive is left open for fifteen or twenty minutes she will, in all probability, return. If, however, the queen was raised in that hive, and was mated from it, there will be no harm if she does fly off the comb, for she will be almost sure to return. Why your queen did not do so, as mentioned in your second paragraph, we are unable to explain. As we have said before, bees (or queens either for that matter) follow no invariable rule.—ED.]

CAN RIPE CELLS BE SENT BY MAIL?

If, as I am led to believe, it is quite a task to introduce virgin queens, why not make it a point to have almost ripe queen-cells always coming, and, so far as practicable, ship them instead of the virgin queens?

FENCES ATTACHED TO SECTION-HOLDERS.

Why are not section-holders made with fence separators attached, since, as it seems to me, comb-honey production without separators would be almost a failure. I have some home-made section-holders with separators attached, the separator being, of course, necessary on only one side of the holders. This also does away with a follower in the super, as the wedges or springs can be put between the ends of the last holder and outside wall of the super.

St. Paul, Minn., July 23. J. A. RYE.

[A ripe cell sent through the mails for not longer than 24 hours during hot weather, if immediately put in a queenless hive on arrival, *may* hatch out into a good queen, but the chances are that she will fail to hatch; or if she does, she will be dark-colored, short-lived, or both. Practical queen-breeders know that, if ripe queen-cells are subjected to a temperature lower than that of the hive for only a short time, the queen, when she does hatch, will not be as strong and vigorous as one that has been kept during the entire period of incubation in a good cluster of bees.

Many years ago, pieces of comb from some good breeder were sent through the mails, which, on arrival at destination, were used for grafting cells. In a few cases, apparently a good batch of cells was secured. It is not practicable to graft from these pieces

of comb except where they are detained in the mail-pouch not longer than 12 hours in hot weather. Later experience in queen-rearing has taught us that queens reared from larvæ, or from cells that have passed through the mails, are not as good as those reared under normal conditions in the hive.

It is perfectly feasible to attach the fences to the section-holders; but the reason why manufacturers do not make up the combination is because it is not so easy to get sections in and out of the supers. Then, moreover, a separator or fence that is fastened to a section-holder can not be readily cleaned of propolis. —ED.]

HOW BEES EJECT WATER FROM NECTAR DURING THEIR FLIGHT.

Dear Ernest:—The article in GLEANINGS, "Ripening of Honey," brings back vividly to my mind the summer when the field where your father's house stands was all in buckwheat. A. I. R. came out to the apiary one sunny day, and, standing by the hickory-tree at the edge of the apiary, called my attention to the bees sailing in from the buckwheat-field; and as we watched them we could see the streams of spray, or droplets, discharged by them as they sailed for their hives. It seems as though it were only yesterday, instead of twenty-seven long years ago. Those were the happy days of boyhood.

Fort Casey, Wash., July 3. ERLE.

[The writer of this, Dr. E. H. Sargent, had charge of our apiary somewhere along in the early 80's. He subsequently graduated from Cornell University, taking a scientific course; taught science at a military academy, and later took the degree of "M. D." During one of his vacations Dr. Sargent made some foulbrood pure cultures at Medina, for that was at a time when the disease was raging in our home yard. Some of his findings at the time were verified by other scientific men. He was always a student of nature, and his contribution of the incident that took place years ago when he was in Medina fits in very nicely here.—ED.]

WHEN IT PAYS TO EXTRACT FROM THE BROOD-NEST AND FEED SYRUP.

The brood-chambers of my hives contain from two to four frames of the finest alfalfa honey. I can get 20 cts. per lb. for this here. Would you recommend extracting this honey at the end of the season and feeding sugar syrup? We usually have here a fall flow of heartsease that they might store for winter; but this has been a dry season with us, and I do not expect the heartsease this time.

Geary, Okla., July 28. N. F. GARDINER.

[Under the conditions mentioned we would advise you to extract your alfalfa honey and feed sugar syrup instead. The latter would cost you about 3 cts. per lb., and when stored in the hive possibly 5 cts., if you figure the evaporation and energy of the bees in putting the syrup into comb. You will then have 15 cts. clear profit less the cost of extracting; but when extracted honey brings only 6 or 7 cts. it usually does not pay to make the exchange for syrup.—ED.]

DOES THE SAME BEE VISIT MORE THAN ONE SPECIES OF FLOWER ON THE SAME TRIP?

I wish to mention a matter about which there is sometimes more or less question; and that is in regard to the matter of bees visiting different flowers in their quest for honey. At Barrington I asked the apiarist to go with me to the alfalfa-field, as I wanted to see if the bees were gathering nectar from it. We found, on arriving there, a mixture of alsike and alfalfa in about equal proportions, and that bees were vigorously at work. I asked him to watch carefully those on alsike and I would do the same to those on alfalfa, to see if they changed to the other plant. In no instance did we find a bee to change from its favorite, though the other actually touched the flower it was working; but a bee working the other would alight on the one rejected. From the examination we made, we concluded that bees never change from their favorite so long as it affords nectar.

Evanston, Ill., July 28. WM. M. WHITNEY.

WHAT IS MEANT BY THE TERM "GOLDEN," REFERRING TO A STRAIN OF BEES?

In perusing the advertising department of GLEANINGS one will observe several queen-breeders offering for sale golden and three-banded Italian queens. One says "golden and three-banded;" others, "golden and red-clover." What I wish to know is, what characterizes Italian bees. It has always been my impression that golden Italian bees should show four to five yellow bands; and if not, they should be classed as three-banded. I have queens in my yard from several breeders, and I wish to give you in a letter my experience with some of them.

Marshall, Mo. R. G. ROBERTSON.

[The term "golden Italians" has come to be somewhat flexible. It may mean on the part of some advertisers four or five banded Italians; and on the part of others, very bright three-banded bees. We do not believe that any of our advertisers mean to misrepresent; but carelessness in the use of the expression has grown up of late. We are hereby suggesting that all of our advertisers be a little more specific in what they mean when they use the term "golden Italians" or "goldens." We hope every advertiser will specify the number of yellow bands to his goldens. This will remove all misunderstanding and objection.—ED.]

CERTAIN COLORS AND ODORS OBJECTIONABLE TO BEES.

With reference to recent articles on bees being more angry at times than others, I have noticed the trouble I have had along this line was while wearing a faded black derby hat, and especially while working the garden and bending over, and that I am not molested while wearing a plain straw hat. Bees know their enemies, as a matter of course. Is it not natural for them to take that old black hat for a bear?

As a further inference, why should they not be hostile to certain colors and certain odors in clothing and people. I had a negro pulling some plants. He could have been heard a block off, and, besides, he tore down some of my best tomato-vines in getting out of the garden. After he was out of the garden he said, "Whoopee! Boss, I reckon you have to keep dem plants."

Suffolk, Va. W. T. BAILEY.

[We may say that it is pretty well established now that dark colors are more objectionable to bees than light ones. Certain persons or animals may give off an odor that is offensive to the extent that it may cause them to sting. It is our opinion, however, that the average colored person could work among bees, if he understands the art of handling them, just as satisfactorily as a white person. We do not believe that the color of the skin itself would make the bees much crosser. The colored man referred to probably manifested a nervousness, and a disposition to strike at the bees, that caused them to attack him, rather than any odor or color of his person.—ED.]

FIRST SWARM OF THE SEASON ISSUES BEFORE QUEEN-CELLS ARE SEALED.

Is it a usual thing for the first swarm of the season to issue without leaving sealed queen-cells? Doolittle, in "Scientific Queen-rearing," says, "I have yet to find where the first swarm of the season, from an apiary, has ever issued previous to the sealing of the first queen-cells." I wish to say that, on June 7, the first swarm of the season in my yard issued. After hiving it I carefully examined the parent hive and found five or six queen-cells, but none of them were sealed.

On June 20, thirteen days after the first swarm, the second one issued from the hive. I have been taught that the eighth day is the time for the second swarm. How about this? J. T. HILLERY.

Columbus, Ohio, July 7.

[In a general way we may say that it is an axiom in beedom that "bees do nothing invariably." While they follow general rules, there are always exceptions. You will note particularly that Mr. Doolittle did not say that a swarm would not issue before the sealing of the first queen-cell, but that he had yet to see a case of that kind.

The same general principle, that bees do nothing invariably, would apply to your last paragraph.—ED.]

DOES HONEY-DEW CANDY?

My experience with honey-dew mixed with other honey is that, in cold weather, the honey-dew will come to the top and remain liquid while the honey will candy. Why can not the honey-dew be poured off and the honey be melted, and thus separated from the honey-dew?

Valparaiso, Ind., Aug. 12. JOHN C. BULL.

[Our experience has rather led us to believe that some honey-dew does candy; but we think that there might be varieties which would behave in the manner described by our correspondent. We should be glad to hear from others.—ED.]

OUR HOMES

BY A. I. ROOT

All scripture is given by inspiration of God, and is profitable for doctrine, for reproof, for correction, for instruction in righteousness—II. TIMOTHY 3:16.

Shortly after our issue for Aug. 1 went to press, our good friend Dr. Miller, in a personal letter to myself, in a sort of postscript at the end, had the following:

When you have time to think it over, I hope you will take it back that Solomon isn't good authority. That is the entering wedge for disbelief in the whole Bible. If you doubt Solomon, I can doubt Paul.

A few days afterward came the following:

Mr. A. I. Root:—The writer of this reads most of your writings in GLEANINGS. Acting upon the suggestion of the publishers, I venture to write a criticism of your paper in the Aug. 1st issue, and also offer some suggestions as follows:

First, you have made a serious error in your criticism of Solomon and the writings ascribed to him, and which it is thought you would not have made had you been as well informed as you might have been from a careful search of the Bible on the subject. Kindly read I. Kings 3:12; also I. Kings 10; II. Chronicles 9; Matthew 12:42.

From the foregoing you will see that our Lord put the stamp of his approval upon the Scriptures without exception, invoking his hearers to search them as authoritative proof of his mission. He unqualifiedly indorses the wisdom of the queen of the South in coming to see and learn of the wisdom of Solomon. Of Solomon's wisdom you have seen it declared that it embraced the fullest extent of human knowledge—none like him before or after, etc.

Again, let me suggest that, if you have a copy of the International Series of Bible (if not, obtain one), of modern arrangement; read the Old Testament summary under the heading of Ecclesiastes, Proverbs, Song of Songs, etc., by George I. Spurrell, M.A., and Rev. C. H. H. Wright, D.D.; and after familiarizing yourself with the views therein set forth, again give us in your journal your views upon the life of Solomon and Ecclesiastes in the light of your latest reading upon the subject.

Your writings are read by a large following; and, being a writer of much influence, you should exercise care to insure against writing at random, or in a manner that might be construed as an adverse criticism of the Bible, which I do not think you intended.

Cleveland, O., Aug. 13. WM. B. HESS, SR.

Well, friends, that is rather tough on the author of the Home Papers, is it not? Dr. Miller says my teaching in that one respect is an "entering wedge for disbelief in the whole Bible;" and this other friend lays down the law (theological law) and accuses me of "writing at random."

I admit that I have been pulled into deep water; but I wish to suggest that our good friend Keck, Dr. Miller, and the writer of the above letter, are *also* in deep water. By the way, may I be excused for suggesting, with the kindest feelings in the world, that it would sound much better if all three of these friends, Keck, Miller, and Hess, would give what they have to say as their *opinion*, or what a careful reading of the Bible seems to say *to them*. It does not help me any to have somebody say, "That is the way the Bible reads, and you can not get around it," especially while so many good people understand certain parts of the Bible differently. Perhaps I am wrong in undertaking to handle such questions in theology.

In II. Timothy 2:23 (the chapter preceding the one from which I have taken my text) we read: "But foolish and unlearned questions avoid, knowing that they gender strife." I would not have gone into this discussion had not friend Keck led the way; but now we are in it I hope you will excuse me for trying to explain to you how I understand God's holy word.

I do believe, as our text says, that all scripture is given by inspiration. But right here my stenographer, W. P. Root, suggests that the New Version reads as follows: "Every scripture inspired of God is also profitable for teaching, for reproof, for correction, for instruction which is in righteousness." I rather think, come to look into it, that I like the New Version better than I do the old. It seems to me that Dr. Miller and friend Hess both fail to consider the point I made was that Solomon had departed *in his old age* from the straight and narrow path. Friend Hess refers us to the 10th chapter of I. Kings; but why did he not turn over the leaf and read the 11th chapter also? But before we consider the 11th chapter there is another point. Allusion has been made to the queen of Sheba. When she visited Solomon he was a good man—that is, it looks so to me. He did not show her his thousand wives (and *surely* not his *concubines*). The queen of Sheba made her visit to Solomon 992 years before Christ. His disobedience to God in worshiping idols was 984 years before Christ—eight years later. I spoke of Solomon having 1000 wives in his old age. I shall have to beg pardon all around. That was a blunder. The 11th chapter of I. Kings tells us he had only 700 wives and *300 concubines*.

Let us go over that 11th chapter a little. The first verse starts out by saying, "But king Solomon loved many strange women." The second verse says that the Lord spoke unto the children of Israel, and they were expressly and plainly forbidden marriage with the other nations. But marrying these women was not enough. The fourth verse tells us, "For it came to pass when Solomon was old that his wives turned away his heart after other gods." The rest of the chapter tells us about his not only joining in with his wives in idol worship, but he "built high places," or temples, as we would understand it, for the worship of idols. He even had one for the abominable *Moloch's* worship; and he "burned incense" unto other gods "for all his strange wives."

The ninth verse says the Lord was angry, because the heart of Solomon was turned away "from the Lord God of Israel." We are told that, after that, the Lord appeared unto him twice, and "commanded him concerning this thing." But the tenth verse says, "But he kept not that which the Lord commanded." After he continued to go from bad to worse, paying no regard to his frequent warnings, the Lord said, "I will surely rend the kingdom from thee, and give it to thy servant." If there is any thing in the Bible to indicate that Solomon repented, like the thief on the cross, and received forgiveness, I have failed to find it; yet I am fairly familiar with all the passages that friend

Hess has indicated. Now just one thing more:

In the fortieth verse of that same chapter we read, "Solomon sought, therefore, to kill Jeroboam." Now, I want to submit the matter to our audience. Of course I do not know just when the book of Ecclesiastes was written; but it was after Solomon's downfall. Let us for a minute contrast the words that friend Keck quotes: "For the living know that they shall die, but the dead know not any thing; neither have they any more a reward, for the memory of them is forgotten." There is more of it, but that is enough. Let us now turn to the 40th chapter of Isaiah, last verse: "For they that wait on the Lord shall renew their strength; they shall mount up with wings as eagles; they shall run, and not be weary; they shall walk, and not faint." There, friends, which is best authority—Solomon in his old age, after he had disobeyed the Lord, and fallen from grace, or the grand old prophet Isaiah who lived an honest, faithful, pure, and true life? Let us now go back to our text.

My understanding of it would be that the Bible *is* "given to us by inspiration," and it *is* "profitable" in the way of its glorious promises and exhortations to purity and righteousness, and it is also profitable in the historical part of it where it tells how good men permitted themselves to be tempted and led astray. Saul started out grandly, but he could not bear responsibility and power. He ended miserably. David started out, both as a boy and a man after God's own heart. He was tempted, and fell, and not only committed adultery but murder. But he repented, and God forgave him. I should be *exceedingly* glad to know that Solomon *repented*.

Now just a word about taking Solomon's last utterances as authority. Years ago I heard of a church-member — in fact I do not know but he was a superintendent in a Sunday-school where he then lived. He was a good man, and stood well in that community; but that man led astray and ruined an unprotected girl who was employed in his family. The matter came into the church, and caused a big excitement; but he confessed his fault, and the church finally decided to overlook it—to forget and to forgive. Years afterward there was a big revival in that community. It was the evangelist's plan to have all the members of the church go out and exhort sinners to repent. He, not knowing the man who had committed that crime, selected this church member among others to go from house to house to talk with the unconverted. Come to think of it, I do not think this man was very wise or he would have declined. A certain day was appointed, and the church-workers went from house to house. This man put his foot on the doorstep to go into the home of a bright and intelligent woman who was not a member of any church. I do not know but she attended card parties and dances, and things of that sort; but when she saw that man (that gray-headed old sinner I was going to say; but as he had confessed his fault to the church I suppose I ought to choose some gentler name) about to come into her home she stopped him at the doorway and said something as follows:

"Mr. Brown, if I am correct you are coming here to talk to me about the welfare of my soul."

I presume he was somewhat embarrassed, for he might have known what was coming. I do not know what he said—perhaps nothing; but she continued: "Yes, I suppose I am a sinner. Perhaps in some respects I am a heathen, and very likely I need reproof. But I hope you will excuse me if I speak plainly, and say it must come from some other source than you. I shall go down to my grave in my sins as I am now unless they have some better messenger from God to come to me and point the way of life."

So far as I can remember he turned around and went home and did not undertake any more "missionary work"—at least at that time.

And this opens up another question—the one about eternal punishment. Perhaps I was unwise and not exactly orthodox when I said I did not believe in everlasting torture. In thinking it over since, I can now tell you better what I do believe. Last Sunday our good pastor gave us a list of things that modern theology has dropped. He spoke of Calvinism and of "God's elect." You older ones will remember the discussions that we used to have on the subject. He said that was all forgotten nowadays, and put aside. I sat close to him, because I had to be right in front of the pulpit on account of my hearing, and I was almost impelled to say, "Thank God." Then he mentioned another thing that is dropped and forgotton, at least in most communities; and that is, that young people belonging to ungodly parents, if they die in childhood are doomed to "eternal condemnation." He did not say eternal *damnation*, but *condemnation*. Now, this old man I have been speaking about, who forgot his religion, his God, and the responsibilities that rested on him (particularly as the father of a family and a member of the church) to protect and be a father to that child—this man must have felt his punishment to the last day of his life, and I hope he *did*. Who ever got a glimpse of the man must have recalled the *crime* he had committed, not only before God but before the eyes of all the world. He was *condemned* here on earth, and I should not wonder if his condemnation rests on him still, and will rest on him for ever. It is a terrible thing to say, yet I should not be surprised if we find, in the great future, that punishment for things of that kind goes on from everlasting to everlasting. Solomon stood before the people as a spiritual leader. His responsibility under the circumstances was a thousand times greater than that of the person I have taken for an illustration. This 11th chapter of I. Kings is a terrible one to read. Solomon continually, persistently, and deliberately broke God's holy command, and refused to heed God's

repeated warnings. But, although this chapter is a terrible one, it is a "*profitable*" one to read, according to the words of our text. The history of the downfall of God's chosen king ought to be a warning to us as to the *consequences* of sin, and an exhortation also to remember God's promises to those who *obey* his holy law.*

While I am familiar with the scripture texts mentioned, I shall have to admit that I have not seen or read the book mentioned; and with my busy life, and especially with the large amount of reading that is piled up before me daily, I can not read any thing that requires very much time. I hope you will excuse me if I say, also, that if the articles you mention try to teach that Solomon in his old age was an inspired authority from God, I hardly think I care to read them. The man who deliberately commits adultery, and does not repent, will very likely soon commit murder. There are not only instances of this in the Old Testament, but the dailies of *to-day* relate no end of cases of adultery, murder, and then suicide. The criminal is not the only one who commits murder; but a man who is comparatively innocent, who has been wronged in his domestic affairs, often kills the guilty accomplice, and the courts seem, a good deal of the time, inclined to excuse him. While discussing this it suggests that a good many have written me articles in regard to the penitent thief on the cross. Many of these writers reject the idea that this thief and probable murderer obtained full and free pardon. Now, if Solomon or anybody else who has been, let us say, unfaithful to his wife, and repents as did the thief on the cross, or the prodigal son, I am willing to accept him as authority.

Toward the close of the last chapter of the book of Nehemiah, that honest, faithful, and sturdy old warrior says, in speaking of Solomon, "Even he did outlandish women cause to sin." Well, it would seem that right down through the ages when Satan has wanted to blockade or blot out a good man he has been choosing these same "outlandish women" to do the work. Sometimes even ministers of the gospel fall in the same way that Solomon did; and I know of no more pitiful spectacle than to see one of these men try to keep on preaching and filling a pulpit, and warning sinners to repent. Once or twice in my life I have heard a minister try to preach after such a thing had happened. The Spirit of God had departed from him, and the poor fellow did not know any better than to think he could preach a good sermon, and that no one would recognize the difference. Hypocrites may carry the day for a little while, but it will not be long. The man must either confess his sins, and ask God and his fellow-men to forget and forgive, or he can never keep on as one of God's chosen servants. In fact, I have sometimes thought it would be better if he would never think of trying to preach any more, no matter how honestly and humbly he may repent. The command, "Thou shalt not commit adultery," comes right after the one against committing murder; and the man who is guilty of either of these great crimes has not only lost his spirituality, but even his judgment and understanding in other matters, seem to have departed from him. He is crippled for life in every way. In view of this, dear friends, shall we not all be *exceedingly* careful? When you are sorely tempted (either by anger or by "strange women"), carefully consider that in *one single moment* you may spoil your peace of mind and your happiness for ever. The consequence of a single act of this kind will punish you through life here on earth, and, according to the Bible teaching, as I understand it, the punishment (in some sort of way that we are not prepared to understand) may go on and *on*, into the great *unexplored* future.

I have a feeling, in closing, that, as I have not studied theology, I am out of my beat; but I have many times thought I would rather have the advice of a common every-day person who has *good sound common sense* than some of the opinions of the learned doctors of divinity. Some of you will, perhaps, think it rather bad taste for my poor self, under the circumstances, to quote the 27th verse of the first chapter of I. Corinthians; but I think I will use it for my closing text.

But God chose the foolish things of the world that he might put to shame them that are wise; and God chose the weak things of the world that he might put to shame the things that are strong.

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* After the above was given to the printers I ran across the following in the *Sunday School Times*, and I regarded it as a "Godsend," for it tells what I wanted to say better than I could have put it in language myself. And, by the way, if there is any better *authority* in the whole wide world than the *Sunday School Times* (so far as theological questions are concerned) it has not yet come to my knowledge. Here is the quotation, the last italics being my own:

Unpunished sin does not exist. No man has ever been clever enough to discover how to sin — even in a trifle — without paying a penalty for it. God does not have to punish us for our sins in any arbitrary way. The sins take care of that — they do their own punishing. A writer in *The Saturday Evening Post*, describing the work of the modern bank examiner, says that such an examiner should have the ability to follow up the first trace of wrong-doing when he runs across it, and then adds, as a reason why this can always be be done if one is watchful enough: *Crookedness invariably leaves a trail, no matter how indistinct the trail may be.* Just there is the punishment of all crookedness, or sin—its trail. That trail may elude human eyes, but it is there. It leads into the life of the one who committed the sin. It is a pathway by which repetition of the sin may enter that life more easily. It is a scar that is never in this world gotten rid of. The trail is blazed the instant the crookedness begins. Our loss and punishment are assured then and there. *Christ can forgive and heal and blot out; but Christ can not undo the record, nor make the loss as though it had not been.* He would have us think of this before the trail is commenced.

"BACKWARD, TURN BACKWARD, O TIME," ETC.

Mr. E. N. Root, of New York city, brother of W. P. Root, our stenographer, has kindly furnished us the names of the authors of the two poems I quoted from in that Home paper, page 481. He says:

"Rock me to Sleep, Mother," was written by Elizabeth Akers Allen, over fifty years ago. She was the author of several fugitive poems. One entitled "Endurance" is a classic.

The other poem, "Alexander Selkirk's Lament," beginning,

I am monarch of all I survey,
My right there is none to dispute,

was written by William Cowper over a century ago. He was the author of many of our best hymns. One of them begins:

God moves in a mysterious way
His wonders to perform;
He plants his footsteps on the sea,
And rides upon the storm.

New York, July 8. E. N. ROOT.

POULTRY DEPARTMENT

BY A. I. ROOT.

THE DOLLAR HEN; A NEW UP-TO-DATE POULTRY-BOOK.

In our issue for May 1 I spoke of a valuable bulletin sent out by the Department of Agriculture in regard to the egg trade of the United States. This bulletin was received with great favor, not only by poultry-journals but by the agricultural papers generally. Some of the poultry-journals considered it of so much value that they copied it entire. Well, this bulletin was the work of Milo M. Hastings, formerly Poultryman at the Kansas Experiment Station, and later in charge of the poultry investigation of the Department of Agriculture; and this new book that is just out is by that same man. It contains something over 215 pages of rather fine print; and my estimate is that this book contains more sound solid sense of real value to the poultry-keepers of the world than any thing else that has ever come to us in print. The book is not illustrated, as I think it should be, and it does not go into detail as many of the other poultry-books do; but it draws a sharp and clear line between good *common sense* and *nonsense*. It is a scientific work, and it comes before the poultry-keepers in the way our experiment stations come before our farming people — not only with authority based on up-to-date science, and with no bias in favor of anybody nor for any particular thing.

With this preface let me make some extracts from the book. It opens up this way:

Twenty-five years ago there were in print hundreds of complete treatises on human diseases and the practice of medicine. Notwithstanding the size of the book-shelves or the high standing of the authorities, one might have read the entire medical library of that day and still have remained in ignorance of the fact that outdoor life is a better cure for consumption than the contents of a drugstore. The medical professor of 1885 may have gone prematurely to his grave because of ignorance of facts which are to-day the property of every intelligent man.

There are to-day on the book-shelves of agricultural colleges and public libraries scores of complete works on "Poultry," and hundreds of minor writings on various phases of the industry. Let the would-be poultryman master this entire collection of literature, and he is still in ignorance of facts and principles, a knowledge of which in better-developed industries would be considered prime necessities for carrying on the business.

The reader who is looking for information concerning fancy breeds, poultry shows, patent processes, patent foods, or patent methods, will be disappointed, for the object of this book is to help the poultryman to make money, not to spend it.

What do you think of the above as a start-out? About a year ago I criticised a new poultry-book from a college professor in the West because he did not seem to have any comprehension of the new things that have recently come up in the poultry business; but the Dollar Hen touches on every thing that is being tried and mentioned in our poultry literature. There has been quite a little discussion in regard to fireless brooders and the Philo system. After discussing the matter of brooders he closes with the following:

Curtis Bros. at Ransomville, N. Y., who raise some twenty thousand chicks per year, have adopted the following system: The chicks are kept under hovers heated by hot-water pipes for one week, or until they learn to hover. Then they are put in Philo boxes for a week in the same building, but away from the pipes. The third week the Philo boxes are placed in a large unheated room. After that they go to a large Philo box in a colony house.

You see, instead of deciding the matter for himself he tells what a big institution has decided on—a place where they raise 20,000 chickens a year; and from what experience I have had with lampless and other brooders I should say the Curtis brothers are just about right in the matter.

After the above he gives the following directions for making a fireless brooder:

To make a Philo box of the Curtis pattern, take a box 5 in. deep and 18 in. to 24 in. square. Cut a hole in one side for a chick-door; run a strip of screen around the inside of the box to round the corners. Now take a second similar box. Tack a piece of cloth rather loosely across its open face. Bore a few auger-holes in the sides of either box. Invert box No. 2 upon box No. 1. This we will call a Curtis box. It costs about 15 cents, and should accommodate fifty to seventy-five chicks.

In regard to the latest investigations in regard to incubators he gives the following:

The writer has long been of the conviction that a plan which would keep the rate of evaporation within as narrow bounds as we now keep the temperature would not only solve the problem of artificial incubation, but improve on nature and increase not only the numbers but the vitality or livability of the chicks.

In regard to turning and cooling the eggs in incubator work, I quote as follows:

In incubation practice it is highly desirable to change the position of eggs so that unevenness in temperature and evaporation will be balanced. When doing this it is easier to turn the eggs than not to turn them, and for this reason the writer has never gone to the trouble of thoroughly investigating the matter. But it has been abundantly proven that any particular pains in egg-turning is a waste of time.

COOLING EGGS.

The belief in the necessity of cooling eggs undoubtedly arose from the effort to follow closely and blindly in the footsteps of the hen. With this idea in mind, the fact that the hen cooled her eggs occasionally led us to discover a theory which proved such cooling to be necessary. A more reasonable theory is that the hen cools the eggs from necessity, not from choice. In some species of birds the male relieves the female while the latter goes foraging.

Eggs will hatch if cooled according to custom; but that they will hatch as well or better without the cooling is abundantly proven by the results in Egyptian incubaters, where no cooling whatever is practiced.

He has quite a chapter on the diseases of poultry; but before he goes into it he gives us a paragraph of good sound sense. See what you think of it:

For the study of the classification and description of the numerous ailments by which individual fowls pass to their untimely end, I recommend any of the numerous books written upon the subject. Some of these works are more accurate than others, but that I consider immaterial. The study of these diseases is good for the poultryman, it gives his mind exercise. When a boy in high school I studied Latin for the same purpose.

The author recommends hopper feeding, or an arrangement for hopper feeding that will let each individual fowl select from the different hoppers so as to make a balanced ration, which I agree with exactly.

In regard to giving chickens meat as well as different grains, he writes as follows:

Chickens are not by nature vegetarians. They require some meat to thrive. It has been proven in several experiments that young chickens with an allowance of meat foods make much better growth than chickens with a vegetable diet, even when the chemical constituents and the variety of the two rations are practically the same.

Very few farmers feed any meat whatever. They rely on insects to supply the deficiency. This would be all right if the insects were plentiful and lasted throughout the year; but as conditions are, it will pay the farmer to supplement this source of food with the commercial meat foods.

After going over the book several times we have decided we can do our readers no greater favor than to offer it at a low price clubbed with GLEANINGS. See A. I. Root's Special Notices in this issue for particulars.

Just one more thing in favor of the book that I came pretty near overlooking. If carefully read it will head off a great lot of the humbugs and swindles now being advertised to-day in our poultry-journals. As an illustration, he shows how utterly impossible it is to sort out the unfertile eggs before they are put into an incubator. Notwithstanding this, a Missouri woman (see p. 216, April 1) is still advertising in many poultry-journals a secret for doing this very thing. There is no method known, and probably never will be, to tell this until the egg has been in a brooding temperature from 48 to 72 hours. The author is thoroughly conversant with the work that has been done at our experiment stations in the United States and Canada; and he uses this knowledge to help people to get rid of a lot of foolish superstitions connected with the poultry and egg industry. The chapters on the care of eggs are well worth a dollar to any one who has hens enough to furnish a dozen eggs a day.

In regard to where the incubator should be located, after quite a valuable chapter on the subject, Mr. Hastings sums it up as follows:

Where incubators are run on top of the ground I have found the results to be poor, and to improve, the bigger and deeper and damper and warmer and less ventilated the cellar is made.

A WHITE-LEGHORN EGG-FARM.

A few days ago somebody told me there was a man within ten miles of my home who had 1500 laying hens, and made it his business to raise eggs for the Cleveland market, devoting his whole farm to that one thing. I have just paid him a visit. His name is Mr. Frank Swift, and I found that he has indeed about 1500 laying hens, besides more than a thousand chickens coming on. He keeps them in yards of between one-fourth and one-eighth of an acre each, and from 200 to 250 laying hens in a yard. These 250 laying hens all roost in one building. Most of the yards have no green thing in them at all unless it is peach and plum or other fruit trees. But they cut grass and carry it to them. Where land is not too expensive it seems to me I would have larger yards, or have extra yards and change the fowls from one yard to another. The chickens are all hatched in incubators. He has no use for sitting hens so far. He has three 360-egg incubators. He has just caught on to the fireless brooder; but he thinks the chickens should have artificial heat for some time at first, say two or three weeks, depending on the season of the year, and, of course, locality. He feeds grain mostly, particularly corn and wheat. The laying stock is fed twice or three times a day. The thousand half-grown chickens are all in one large lot, and are fed three or four times a day, while the thousand run all together, if they choose. They roost nights in six colony houses after the Cyphers pattern.

When I asked if they had no trouble from contagious diseases where 200 or more are kept in one house, the young man who showed us around said he could not remember that they had had any trouble of that kind.

The father was absent at the time, or perhaps I should have been able to get more exact particulars. They have some trouble from poultry vermin, of course. If I recollect rightly he said they used no preventive except gasoline and carbolic acid sprayed on the walls and roosts. Some of their houses have cement walls. These are less likely to harbor vermin They keep the vermin off the roost-poles by dipping them in kerosene. They manage sitting hens by getting them all off the nests at four o'clock and shutting the nest up. The nests have a long door in front, hinged at the bottom. By raising it up and fastening it with a button they close a long string of nests at once.

Right in the middle of August, in the moulting season, he says they are getting about 600 eggs a day from the 1500 hens. Their laying hens are disposed of, usually, when about three years old; therefore 1000 chickens must be raised, more or less (counting about half as roosters) to keep up the number.

I asked the young man how long his father had been keeping 1000 or more laying hens right in those same yards. He said he did not know, but it was about as long as he could remember.

Now, I hope friend Swift will excuse me when I mention something very singular about his poultry-keeping. They do not read or take *any poultry-journal at all*, and no agricultural paper having a poultry department; and yet Mr. Swift runs a successful egg-farm, and keeps it up year after year. I suppose there are two extremes which we should avoid, and friend Swift has taken one of them, if I am correct. He goes on his own way, and ignores all that is going on in the great outside poultry world. The other extreme would be to take all the poultry-journals and a great lot of agricultural papers, just as I am doing, and have a great lot of book knowledge without much real practice. If I am not mistaken, a lot of people have failed with egg-farms because they depended on books *too much* and on the statements in the poultry-journals. I do not wonder that people who start out with honest enthusiasm become disgusted and discouraged by sending for the poultry secrets that have

been so much advertised, and then finding they have been "humbugged *again*."

The young man said he had heard of the Philo sytem, but they had never cared enough about it to get Philo's book. They were considerably interested, however, in the lampless brooder.

I asked about having a bone-mill and getting bones at the butcher's. They are quite a piece from any meat-market; and besides, he said, they had a bone-mill, but it was too hard work to turn it. When I suggested a gasoline-engine he thought that was going to a great deal of expense just to grind bones for chickens. Yes, it is; but if the engine could be made to do a lot of other things besides, it might prove to be a good investment. They have a windmill and a water-tank, and run water to all the nearby yards. They give the chickens water in open buckets. When I suggested the drip system and a little cup that is constantly running over he said it would no doubt be a good thing, but they had not got around to it.

They furnish the meat part of rations for the laying hens by purchasing beef scrap and mixing it with a wet mash.

They built one poultry-house with cement walls partly under ground, expressly to grow broilers from eggs hatched quite early; but they did not make it pay. They are using this broiler-house now for a laying-house; but he said it did not give any better results, if as good, as the houses built on top of the ground; and I believe it is generally true that chickens do not seem to thrive in any apartment where the floor is much below the general surface of the ground.

I asked him if one man could take good care of 1500 laying hens and 1000 chickens. He said he guessed he *could*, but sometimes it would "keep him humping." It looks to me as it it would save them a lot of time and work to have drip water in every poultry-yard, and some arrangement for hopper feeding. It might take a little more feed, but I am not sure of even that; and when every chicken in the whole ranch never goes hungry, there would certainly be a better egg-yield.

I supposed, of course, that with from 600 to 1000 eggs a day they would be carried to the Cleveland markets, about 20 miles away, every day or every other day; but he says they carry their eggs to the city only once a week, and they take no pains to tell their customers which eggs are one day old and which are a week old. They are sold at the groceries; but, of course, they could get more money by delivering them, say, when they are one day old, to special customers; but it would be quite a little more expense than taking them where they can unload at once and go straight back home.

SKUNKS, WEASELS, HAWKS, ETC.

He said they had pretty effectually cleaned out all the enemies of a chicken-farm except the hawks. When I asked him why they did not give those half-grown chickens a cornfield to run in during the very hot days he said that was what they used to do until the hawks got a fashion of hiding in the corn so as to catch the chickens. When they banished the cornfield and put the chickens in an open lot without any trees, nor any thing for shade except their roosting-places, they managed to keep the hawks away. Several of the yards for laying hens are in a good-sized orchard; and I believe an orchard is about the best place for a poultry-yard. The chicks pick up many of the insects that trouble apple and plum trees, and they also keep up the fertility of the soil.

Mr. Swift has nothing but pure White Leghorns; and one of the poultry-journals recently made the statement that the successful egg-farms, almost all the world over, are using only a non-sitting strain of White Leghorns.

When I asked the young man if his father did not buy a pretty good-priced rooster, one or more every season, to get a good strain of blood, he said he never had so far as he knew; and he did not think they took any pains to get new blood outside of the premises. With so many yards it was an easy matter to select a male from some yard that was no close relation to the laying hens in another yard; and he certainly had some very handsome Leghorns, both male and female.

In conclusion I am glad to know of at least one egg-farm right near our home that is a paying business; and I do not know, too, but it is a pretty good thing to know that it pays without the help of a poultry-journal or *any* of the new-fangled inventions and ideas.

POULTRY SECRETS, ETC.

We clip the following from the *Poultry Digest*, and they copy it, as you will notice, from the *Petaluma* (Cal.) *Poultry Journal:*

I have been reading about a feed at 8 cents a bushel. The man who puts it up or sells the formula to make it lives in Illinois. He says thousands of poultrymen are using it. What do you think about it?—L. S. R.

You can best find out by writing direct to the man who is the originator of this cheap food. But you must know that it is impossible to furnish a satisfactory and reliable food for fowls — a food they could live on and get fat on — for ten times eight cents. There must be some "catch" in the proposition. There *is* some catch in it. Write him, and then you will be better satisfied. The man who puts out this feed is a poultryman, and an old writer for the poultry press, and I am astonished that he should be guilty of any thing not on the level.—*Petaluma Poultry Journal.*

There you have it, friends, straight from the shoulder. Ten times, as they put it, is rather strong, but I do not know but it may be about right. The *Petaluma Journal* and the *Poultry Digest* can neither of them hope to get any advertising from Fred Grundy when they come out thus squarely against his plan of getting people's money. They omit to tell you that he wants $2.00 for his little paper-covered book containing the secret of making "feed for 8 cts. a bushel," etc.; but whenever a poultry-journal comes out thus I think it ought to be patronized. If you want a weekly poultry-paper, send a dollar to the editor and thank him for his timely warning; and if you care for only a monthly, send 25 cts. for the *Poultry Digest*

and tell him the same. Let me add, however, that friend Grundy's book contains many good things. If the price were 50 cents instead of $2.00 I should be glad to recommend it, notwithstanding its exaggeration about "8 cents per bushel," etc.

"ANIMATED EGGS;" SOMETHING ABOUT IT FROM "CANNIE SCOTLAND."

Dear Mr. Root:—On page 21, June 15, under special notices by you, "animated eggs, a great discovery," you go on to describe the wonderful phenomenon of eggs rolling about on a smooth surface. The same thing has always been known in Scotland. Before up-to-date egg-testers were thought of, just near hatching time we took the eggs from under the hen or machine and put them in warm water, and those that were fertile we saw rolling about and around the dish, which is just caused by the same motion as rolling on the smooth glass.

The weather here in Scotland has not been good for honey as yet. We hope it may come soon, as the white clover is showing in fine bloom. Just a little more heat and dry weather, and it would roll in.

JAMES SMITH.

Mid Locharwoods, Rothwell, Scotland, July 5.

Thank you, friend S.; but if I understand you it has long been known that eggs would move about when put in water; but did any of our Scottish friends ever find out that eggs would move in a like manner when laid on a smooth glass? So far, nobody has shown definitely that the experiment of the egg on a looking-glass had ever before been performed.

"COMING EVENTS CAST THEIR SHADOWS BEFORE."

When I was eighteen years old I predicted that electricity would soon take the place of steam in transporting people from place to place; and as a proof I exhibited around at schoolhouses a home-made model of a little electric motor. From my boyish point of view I supposed we would travel by electricity in two or three years; but it took *thirty* or *forty* years. Later on I told you that automobiles would soon be more plentiful than carriages drawn by horses. This event, too, took longer than I expected, and it has not yet come to pass, except in certain localities. In 1904, when I told you about the Wright brothers, and a little later when I told you at length what I had seen with my own eyes, I said at that time that their discovery (that the air could be traversed without the aid of balloons or gas of any kind) would make a sensation in the world akin to the discovery of America by Christopher Columbus. I thought then that *before* the year 1909 we would see the air full of flying-machines. Now, it may take until 1910 for my more mature prediction to come true. But if nothing hinders, before the snow flies in the Northern States, *this year*, we shall see an excitement throughout the whole wide world that will eclipse any thing known heretofore. I need not take space here to give you the proof of what the Wright brothers and a host of others scattered almost all over the face of the earth are doing in this new lately developed gift from God. Automobiles will be comparatively out of date. Iron tracks and bridges that cost up into the millions will be no longer needed. While I dictate these words, every daily records with startling headlines "All previous records smashed and broken." This morning we are told that our good friends the Wright brothers are left behind; but to-morrow's daily may tell us that our old friend Wilbur is "up on his nerve," and is not so much behind after all. If these boys will only be careful and not get killed, while they are almost wild with enthusiasm with the successes that are coming, we shall be very glad indeed. May God be praised that I have been permitted to live long enough to see flying-machines an assured success.

HELPING TO "REPLENISH THE EARTH," OR CONTRIBUTING TO "RACE SUICIDE," WHICH?

Just a few days ago I happened to look out on the street in front of our home. By the way, it is a beautifully paved street of vitrified brick; and our contribution to the part of it that runs in front of our factory and through "Rootville" was about $1700. Now, what I saw out on that street was a boy, of eight or nine years old, instructing his younger brother (about five years old) how to ride a juvenile bicycle. It was a real bicycle, fitted up just like a big one, but made for a small boy. As it was summer time I think both teacher and pupil were sweating somewhat; but before they finished their morning lesson, Ralph Boyden, the youngest, was going up street and down, making the turns all right, even though he did do some grotesque wabbling. The young teacher, his brother Wynne, was watching him, and feeling happy to think they had succeeded. While this was going on, Howard Calvert whizzed by with the speed of the wind on a new motor bicycle he has just purchased. Leland Root, the oldest grandson, was getting ready to take me out to that White Leghorn egg-farm; but a telephone message came from our "Wise doctor" (his name is Dr. *Wise*) saying he had an urgent call to visit a patient out in the country; and as his own machine was disabled he wanted to know if the Root family could help him out. Leland hopped out of our big Reo, and ran another machine up to the doctor's without even waiting to excuse himself. Leland's younger brother, Alan, about four (the A. I. Root of the future), has a small foot-power automobile. While this was going on, little Jean (the "girl baby" over at our home) was showing her grandpa her newly acquired tricks, and letting him know how much she could talk. Katherine Root, over at the other home, was entertaining the family with her bewitching smiles. The two other girls, Mildred Calvert* and Helen Boyden, were off with our Mr. A. L. Boyden on a vacation trip to Niagara Falls with a new automobile of their own. As I took in the situation that summer morning I said to Mrs. Root, "These boys

*It is not the boys only who take to automobiles; for Miss Mildred, not quite fourteen years old, runs her father's Reo runabout very skillfully; and when he was in California she helped all Rootville to get to church and Sunday-school and back.

Continued on page 20, advertising.